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ANNUAL MEETING CUNARD COMPANY.

The annual meeting of the Cunard company's shareholders was held at Liverpool on Thursday, April 19, presided over by Mr. William Watson, chairman of the company.

In moving the adoption of the balance sheet and report of the directors, the chairman alluded to the great loss which the untimely death of Lord Inverclyde, the late chairman, had caused to his family, his friends, and to the company. His energy, courage, and readiness at all times were devoted to the Cunard company, and he had no other interest greater than that of making the company a success. They could not yet realize all that he did for them, but the day would come when they would acknowledge it. The present board were endeavoring to carry on the policy of the company as he inaugurated it, and with which he might say they were all in full accord. In dealing with the accounts, the chairman remarked that the directors were glad that they were able after setting aside $200,000 to the reserve fund, to recommend the payment of a four per cent dividend. The income, $7,093,072, was the largest in the company's history. The increase over 1904 was $1,138,032. This increase was due largely to the restoration of normal rates of passage money, but to some extent to other causes, including the better homeward freights, which prevailed during the last few months of the year. The running expenses of the ships, coals, wages, provisions, etc., were increased by $159,940, owing to the larger number of voyages made, and also to the advent of larger ships. Office and agency expenses also showed a slight increase, due to extensions of office premises, and to heavier work in connection with the larger business done. The repairs and renewals of the fleet have cost less than last year by $58,765. To summarize the whole we might say that the income had been increased by $1,422,540, and the expenses by $189,570, showing a net improvement of revenue of $1,232,970. The only noteworthy item in the profit and loss account was the amount set aside for depreciation, which is $210,850 more than last year, due to the increasing value of the fleet. It would be seen that after paying the dividend, they carried forward to 1906 practically the same credit balance between $35,000 and $40,000, that was brought forward last year. In the general balance sheet, the most important items were the large addition to the book value of the fleet, and of course a corresponding augmentation of the company's liabilities. The great feature of existing passenger traffic is that it is being carried in larger and more expensive ships, and the directors did not hesitate to place the company in a position to attract business and meet competition. To build the Caronia and the Carmania, and to incur this large liability illustrated in a striking way the courageous policy of their late chairman, which he was glad to think was being justified by the event. The Caronia and Carmania were two of the finest vessels afloat, and had already acquired a popularity which would prove a material factor in the earnings of the company. It was a little too early to compare the merits of the turbine and the reciprocating engine, but he might say that the turbine had proved its efficiency, and he had not the least doubt himself that in a a short time it would be applied to all fast ocean-going vessels. The important question was, of course, the relation of speed to coal consumption. In this they were still experimenting. Of course they were working under entirely new conditions, and in order to obtain the most effective results, some patience and many trials might be required, but so far as they had gone they were quite satisfied of the wisdom of the step which they had taken. They had commenced to pay off the acceptances, and hoped to make a sensible reduction of them during the present year. The New York-Mediterranean business had shown a real improvement, although the disturbed condition of political matters in Hungary had somewhat impeded its full development. The two new fast ships which were building under agreement with the British government were making good progress. Messrs. John Brown & Co. expect to launch the Lusitania in June of this year, and Messrs. Swan & Hunter and Wigham Richardson, Ltd., the Mauritania in September, and before the end of the next year they hope to have them in commission. The time seemed long, but the vessels were of such an exceptional character that the directors hold that it would not be wise to hurry the builders in their work. The position of the company in relation to its competitors remained very much the same as described by the late Lord Inverclyde at the last annual meeting. The Cunard company was still working independently, and was not bound by agreements of any kind. But although there had been no formal arrangements all lines found it to their interest to maintain rates at the level to which they had been raised by the conditional agreements, and that position still continued. No line could expect any advantage at present by reducing rates, and it seemed quite likely, therefore, that although there were no binding documents, the existing rates would remain undisturbed. As the late chairman stated last year, the company were bound to take the step they did in withdrawing from such agreements, and the outcome had proved that this action was wise. The report and statement of accounts were adopted without debate, and the dividend of 4 per cent declared. The shareholders evidently have confidence in the present policy of the board, for no questions were asked, and the meeting was over in less than fifteen minutes.

The Penberthy Injector Co., Detroit, Mich., is about to let contract for a large addition to its present plant, increasing its capacity 50 per cent. A new office building will also be constructed.

SCIENTIFIC LAKE NAVIGATION.

By Clarence E. Long.

To Read the Numerator.—The numerator of a decimal fraction must consist of as many places as there are ciphers in the denominator; if there are not as many the shortage must be made up by placing ciphers before it. In a case of this kind it would be well for the beginner to write the denominator first and then the numerator, placing ciphers to the left of the numerator to supply the deficiency, as two hundredths, for instance, the denominator would be 100 and the numerator 2 = 2-100, but as a decimal you must have as many places in the numerator as there are ciphers in the denominator; as the numerator now stands there is only one place, and there would be two. Adopt the following: Write the numerator over the last cipher of your denominator, then a cipher over the next cipher of the denominator, and directly over the figure 1 of the denominator place the decimal point, then cross out your denominator, and you have the decimal required. Operation:

$$\frac{}{100}\ \text{denominator.}$$

$$\frac{2}{100}$$

$$\frac{02}{100}$$

$$\frac{.02}{100}$$

$$\frac{.02}{100} = \text{2-hundredths.}$$

Two-thousandths; 1000 is the denominator, so write the figure 2 over the last cipher of the denominator, and then prefix a cipher over each of the other ciphers of the denominator, and over the figure 1 place the decimal point and you have it; thus, .002, or as a decimal .002.

$$\frac{.002}{1000}$$

Read the following decimal fractions and write them out, just as you would read, or speak them off, as .25 would be twenty-five hundredths; .5—five tenths; .125—one hundred twenty-five thousandths.

.8 = eight tenths.

.75 = seventy-five hundredths.

.02 = two hundredths.

.005 = five thousandths.

.855 = eight hundred fifty-five thousandths.

.075 = seventy-five thousandths.

.2567 = two thousand five hundred sixty-seven ten thousandths.

.0067 = sixty-seven ten thousandths.

.0007 = seven ten thousandths.

.12345 = twelve thousand three hundred forty-five hundred thousandths.

.02345 = Two thousand three hundred forty-five hundred thousandths.

.00345 = three hundred forty-five hundred thousandths.

.00045 = forty-five hundred thousandths.

.00005 = five hundred thousandths.

.178345 = one hundred seventy-eight thousand and three hundred forty-five millionths.

.00903624 = nine hundred three thousand six hundred twenty-four hundred millionths.

Note.—Those who have never had occasion to study arithmetic according to true principles, that is, as it is taught in the regular schools, will be able to understand decimal fractions more readily than common fractions. This is no doubt due to the fact that our money system is based upon the notation of decimals. Everybody can readily count money in any and all its denominations. The unit of our money is 1 dollar; the cents or decimals of the dollar are the lower order of units or parts of the dollar. The dollar is written in the place of the unit; dimes, cents and mills are respectively *tenths*, *hundredths*, and *thousandths* of the unit. The denominator for cents is 100, showing that the whole is divided into 100 equal parts, or 100 cents equal 1 dollar. When the number of cents is less than 10, it is necessary to write a cipher in the place of *tenths*, thus, 2 cents is written, $.02, that is 2 parts of the 100 parts. $.25 is 25 cents, or ¼ of a dollar. If you find it difficult to understand common fractions, you will be able to understand them better after you have studied decimals. Many people who are unable to add, subtract, multiply and divide common fractions, are able to perform these operations with ease in decimals. The rules for decimals are easily learned on account of being similar to those of whole numbers. In common fractions there are more rules and forms to remember and keep track of. There are points of favor in both of these systems. In some cases common fractions are more advantageous than decimal fractions. Of the two systems decimal fractions are the more useful.

Reduction of Decimals.

To reduce dissimilar to similar decimals:

Reduce .5 to a similar decimal. .5 = .50, or .500, or .5000, etc. .5 is ½, so is .50, .500, etc., ½. Annexing ciphers does not change its value, but prefixing them diminishes it tenfold.

To convert decimal fractions into common fractions:

Now, the next thing you will want to know is, how is one to know that .125 is ⅛ and .875 is ⅞, that .25 is ¼ and .5 is ½, and so on.

Rule.—Omit the decimal point, supply the denominator, and reduce the fraction to its lowest terms.

Make a common fraction of each decimal, that is, with a numerator and denominator, 125-1000, and then reduce it to its lowest terms; that is, some number that will go into 125 an equal number of times, and into 1000 an equal number of times, (not the same number of times) and at the same time reduce both proportionately, as 2-4 is ½, 2 into 2 once and 2 into 4 twice. Now, what number will go into 125 an equal number of times and into 1000 an equal number of times? 5 will do it; so will 25 and so will 125. 125 into 125 once and 125 into 1000, 8 times, or ⅛. Now, we'll try 5 for a divisor: 5 into 125, 25 times, and 5 into 1000 200 times, or 25-200, which is the same thing as .125 or ⅛. Try 5 again and you will get 5-40, which divided by 5 again gives ⅛.

Fractions should always be reduced to their lowest terms.

Reduce .25 to a common fraction, 25-100. 25 is the greatest common divisor and is contained in 25 once and in 100, 4 times, or ¼.

Reduce .5 to a common fraction. Ans. ½.

To find the difference between .375 and ⅜, either reduce .375 to its lowest terms by getting some number that will go into 375 an equal number of times, and into 1000 an equal number of times, or by converting ⅜ into a decimal by adding ciphers to the numerator (top figure) and dividing by the denominator (lower figure). Thus, 375-1000 = 15-40 = ⅜; or 8) 3.000 (.375

24

60

56

40

40

.875 = 25 | 875-1000 = 5 | 35-40 = 7/8.

.75 = ¾; .4 = 2-5; .625 = ⅝; .9375 = 15-16; .039 = 39-1000; .0064 = 4-625; .00625 = 1-160.

To convert, or change common fractions to decimal fractions:

Rule.—Annex ciphers to the numerator and divide by the denominator. Point off as many decimal places in the quotient as there are ciphers annexed.

Now, if you are not familiar with decimal fractions the first thing that will bother you is how is one to know that ¼ is .25; ½ is .5; ⅛ is .125, etc. Here is the way that it is done: add one or more ciphers to the numerator and divide by the denominator, thus ¼ = 4) 1.00

.25

½ = 2) 1.0 1-8 = 8) 1.000

.5 .125

2-3 = 3) 2.000

.666 + or, .666 2-3. The sign + is sometimes placed after the result to indicate that there is still a remainder.

Change ⅜ to a decimal fraction, equals .375; ⅝ = .625; ¾ = .75; 2-5 = .4; 4-5 = .8; 1-3 = .33 + or .33 1-3; 43-56 = .7678 +; 101¼ = 101.75; 11⅛ = 11.125; 25½ = 25.5; 40 1-3 = 40.33 1-3.

Note.—In many cases the division is not exact. In such instances the remainder may be expressed as a common fraction, or the sign + may be employed after the decimal to show that the result is not complete; thus, 1-6 = .166 2-3 or .166 +.

Addition of Decimals.

Addition of decimals is performed exactly like that of whole numbers, placing the numbers of the same denomination under each other, in which case the decimal points will range straight in one column, thus:

Examples—

Miles.	Feet.	Inches.
26.7	1.26	272.3267
32.15	2.31	.0134
143.206	1.785	2.1576
.003	2.0	31.4
202.059	7.355	305.8977

Rule.—Write numbers so that decimal points stand in a column. Add as in whole numbers, and place the point in the sum directly under the points above.

Add the following, reducing common fractions to decimals: 18¾ + 9.048 + 25 1-20 + 163 + 2.09 + .0975 = 218.715 Ans.

What is the sum of 37 thousandths, 54 ten thousandths, 407 hundred thousandths and 12,345 millionths?

.037 thousandths
.0054 ten thousandths
.00407 hundred thousandths
.012345 millionths

.058815 millionths

Find the sum of $25¾, $81.09; $16⅛; $.87½; $150½; and $7⅛ = $275.215 Ans.

How many rods of fence will enclose a field the sides of which are respectively 34.72 rods; 48 11-25 rods; 152.17 rods; 95⅜ rods, and 56⅝ rods. Ans: 387.33 rods.

Find the sum of 3-80, 2-7, 43-56, 7-24 and 75-436, in decimals, work to the fourth place. 1.5547+.

Do you thoroughly understand that when adding decimal fractions that you will have one decimal place when you add tenths and tenths, and two places when you add hundredths, and three for thousandths, four for ten-thousandths, etc.? That you will also have two decimal places if you add tenths and hundredths, and three for tenths and thousandths, etc.?

Now, we'll do a sum in common fractions, and then the same sum in decimal fractions.

¼ + ½ + ⅛ = ⅞

¼	expressed decimally is	.25
½	=	.5
⅛	=	.125
⅞	=	.875

Remember, that the addition of decimals is performed the same as in whole numbers, due regard, of course, being paid to the decimal point. See that the decimal points come directly under one another, just the same as degrees under degrees, minutes under minutes, etc.

Add .5 and .75. Ans. 1 and 25 hundredths.

Add .02 and .005. Ans. 25 thousandths.

Add .25 and .125, also ¼ and ⅛. Ans. .375 and ⅜.

Can you see that by adding tenths and hundredths that you will have two decimal places? If it bothers you to read and write the decimal when spelt out, this will probably help you some: that part of the decimal that has *ths* on the end of it is always the denominator, as twenty-five *hundredths,* hundredths is the denominator.

How many decimal figures in the sum of *tenths* and *tenths?* Ans. one decimal place. Of *tenths* and *hundredths?* Ans. two places. Of *hundredths* and *thousandths?* Ans. Three places. Of *tenths and thousandths?* Ans. three places.

In adding several decimals, each having a different number of decimal places, how many places will there be in the sum? Answer: the decimal point of the sum or amount will be controlled by the greatest number of places of the decimals added.

Note.—The denominator of a fraction is 100, the numerator 7; what will express the decimal? Ans. Point, cipher, seven, read seven-hundredths; written .07. The denominator is 1000, the numerator 35? Ans. Point, cipher, three, five, read thirty-five thousandths; written .035 (35-1000). In writing decimals, vacant orders must be filled with ciphers.

SUBTRACTION OF DECIMALS.

Subtraction of decimals is performed in the same manner as in whole numbers, by observing to set the figures of the same denomination and the decimal points directly under each other, thus:

From	31.267	36.75	1.254	1364.2
Take	2.63	.026	.316	25.163
Differ.	28.637	36.724	.938	1339.037

Rule.—Write the numbers so that the decimal point of the subtrahend is directly under the decimal point of the minuend, subtract as in whole numbers and place the point in the remainder directly under the point above. Or, write the subtrahend under the minuend, so that units of the same order stand in the same column.

Subtract as in subtraction of whole numbers, and place the decimal point before the order of tenths in the remainder; or, place the point in the remainder directly under the decimal point above.

From 46.57 subtract 9.46325.

46.57000 = 46.57
9.46325 = 9.46325

37.10675 37.10675

Explanation:—The numbers are written so that units stand under units, tenths under tenths, etc. The decimals may be made similar and then subtracted, care being taken to place the decimal point in the remainder directly under the decimal point in the number subtracted. The ciphers may be supposed to be annexed when we subtract, and consequently need not be written.

From a cistern that contained 30.5 barrels of water, 25.75 barrels were drawn off. How much water remains in the cistern? Ans. 4.75 barrels.

A man whose income was $10,000, spent in one year $7,375.87. How much did he save that year? Ans. $2,624.13.

In a cistern that will hold 326.5 barrels of water, there are 178.625 barrels. How much does it lack of being full? Ans. 147.875 barrels.

A vessel sailed from Portland, Me., for New Orleans with a cargo of 1528.375 tons of ice. On the way 94.85 tons of it melted. How much ice reached New Orleans? Ans. 1,435.525 tons.

Find the difference, decimally, between

16½ and 43 3-16 = Ans. 26.6875.

1.0066 and .630482 = Ans. .376118.

143⅞ and 304.96 = 161.085.

2 and .00345 = 1.99655.

$.875 and $⅝ = $.25.

Note.—The decimals may be made similar by annexing ciphers until both have the same number of places, but the ciphers may be supposed to be there even though they are not written. The decimal part of the remainder is separated from the whole part by the decimal point.

How many decimal places in the remainder, if there are three in the minuend and one in the subtrahend? Ans. three places. If two in the minuend and four in the subtrahend? Ans. four. If none in the minuend and three in the subtrahend? Ans. three.

MULTIPLICATION OF DECIMALS.

Rule.—Multiply as in whole numbers, and from the right of the product *point off* as many decimal places as there are decimal places in both factors. If there are not as many figures in the product as there are decimals in both factors, supply the deficiency by prefixing ciphers.

Principle.—The product of two decimals contains as many decimal places as there are decimal places in both factors.

To multiply by 10, 100, 1000, etc., remove the decimal point in the multiplicand as many places toward the right as there are ciphers in the multiplier.

The factors are the multiplier and multiplicand; the numbers from the multiplication of which the product results, as .25 multiplied by .5 gives a product of .125. Now, there are two places in the multiplicand, which is one of the factors, and one in the multiplier, which is the other factor, or three decimal places in both factors, so there will be three decimal places in the product; therefore, hundredths and tenths multiplied together always makes three decimal places in the product. Tenths and tenths multiplied together give two decimal places in the product, as there are that many in both factors. Hundredths and hundredths multiplied together will give four decimal places in the product, there being two in each factor.

Remember, the product must consist of as many decimal places as there are decimal places in both factors put together, and when it happens that there are not as many places or figures, in the product as there must be decimal places, then prefix as many ciphers to the left as will supply the shortage, as .25 multiplied by .05, thus,

$$\begin{array}{r} .25 \\ \times\ .05 \\ \hline .0125 \end{array}$$

Now, you will see before multiplying that there is going to be four places in the product, the decimal places in both factors being four, two in each; but, when you multiply you'll only have three places, just as though you multiplied 25 by 5, so that is the reason for prefixing the ciphers to supply the deficit; .25 multiplied by .5 would be .125, while .25 multiplied by .05 = .0125.

Remember, that in counting the number of decimal places, always begin at the decimal point and count everything to the right (but don't count in the decimal point), but when pointing off to place the decimal point begin at the right and count towards the left.

In decimal multiplication you do not pay any attention to the decimal point until you are through multiplying, that is, it is not necessary to have one decimal point under another, as tenths under tenths, etc.

.64 ^{2}	1.245 ^{3}	.4056 ^{4}
.8 ^{1}	.27 ^{2}	35.05 ^{2}
.512 ^{3}	8715	20280
	2490	20280
	.33615 ^{6}	12168
		14.216280 ^{6}

Note.—The small figures in the upper right hand corner in the above examples indicate the number of decimal places in each factor, and the total number in the product.

How many decimal places in the product of units multiplied by tenths? Ans. one. Tenths by tenths? Ans. two. Tenths by hundredths? Ans. three. If there are two decimal places in the multiplicand, and two in the multiplier, how many in the product? Ans. four. If three in the multiplicand and one in the multiplier? Ans. four. How many decimals are there always in the product? The number of decimal places in any product is equal to the decimal places in both factors. Or, the product of two decimals contains as many decimal places as there are decimal places in both factors.

What is the product of .275 multiplied by .17?

$$\begin{array}{r} .275 \\ .17 \\ \hline 1925 \\ 275 \\ \hline .04675 \end{array}$$

Explanation.—Since 275 and 17 are the numerators of the fractions, in multiplying the fractions, we must multiply 275 by 17, which gives 4675 for a new numerator. Since thousandths multiplied by hundredths produce hundred-thousandths, the product of the fractions is 4675 hundred-thousandths, or .04675. Or, the number of decimal places in the product will be five, the number of decimal places in both factors.

A steamship in crossing the Atlantic sailed at an average speed of 325.75 miles per day. If another steamer sailed from the same port at the same time at the rate of 395.35 miles per day, how far were they apart in 5.75 days? Ans. 400.2 miles.

Multiply and express the product decimally:

324½ by 3.24 = 105.138.

175.64 by .205 = 36.0062.

5.728 by 100 = 572.8.

.6207 by 1000 = 620.7.

3.126 × .046 × .3 = 0431388.

If a boat makes 12⅞ miles in one hour, how many miles will she make in 2 hrs. 20 mins.? Ans. 30.04 +.

DIVISION OF DECIMALS.

Division of decimals is performed in the same manner as in whole numbers; only observing that the number of decimal places in the quotient must be equal to the excess of the number of decimal places of the dividend above those of the divisor. When the divisor contains more decimal places than the dividend, ciphers must be affixed to the right hand of the latter to make the number equal or exceed that of the divisor.

Principle.—The quotient will contain as many decimal

places as the number of decimal places in the dividend exceeds those in the divisor.

Before commencing the division, the number of decimal places in the dividend *should be made at least equal* to the number of decimal places in the divisor. When there is a remainder after using all the figures of the dividend annex decimal ciphers and continue the division.

For all practical purposes, it is not necessary to carry the division further than to obtain four or five decimal figures in the quotient.

Divide 14.625 by 3.25.

```
3.25 ) 14.625 (4.5
       1300
       ----
        1625
        1625
        ----
```

In this example there are two decimal places in the divisor and three in the dividend; hence, there is one decimal place in the quotient.

Divide 9.6 by .06.

```
.06 ) 9.60 ( 160
      6
      --
      36
      36
      --
       0
```

Here, by affixing a cipher to 9.6, it becomes 9.60, and has then two decimal places in it, which is the same number as in the divisor; therefore, the quotient is a whole number.

If the quotient does not contain a sufficient number of decimal places, the deficiency must be supplied by prefixing ciphers. When there is a remainder after using all the figures of the dividend, annex decimal ciphers and continue the division.

Divide .00864 by .24.

```
.24 ) .00864 ( .036
       72
       --
       144
       144
       ---
```

Explanation.—The numbers are divided as if they were whole numbers. Since the dividend contains five decimal places, and the divisor two, the quotient contains 5 minus 2, or 3 decimal places. Since there are only two figures in the quotient, a cipher is prefixed to make the required number of decimal places.

Divide 3.1 by .0062.

```
.0062 ) 3.100000 ( 500.00
        3.10
        ----
        00000
```

Therefore, the answer is 500.00, or 500.

Rule.—Divide as in division of whole numbers and from the right of the quotient point off as many figures as the decimal places in the dividend exceed those in the divisor.

Here is another rule for pointing off: Subtract the number of decimal places in the divisor from those in the dividend and with the remainder left, if any, point off the quotient, starting with the last figure and moving toward the left.

Note.—In a great many examples it is necessary to add ciphers to the dividend, each cipher added counting as a decimal place. This is on the same principle and rule of converting a common fraction to a decimal fraction. It is necessary in a great many cases to add ciphers in order to have the quotient come even.

Divide .75 by .25. If you have the same number of decimal places in the divisor as in the dividend there will be none in the quotient. You know from common sense that ¼ goes into ¾, 3 times.

Divide .75 by .5.

```
.5 ) .75 ( 1.5
     5
     -
     25
     25
     --
```

One decimal place in the divisor and two in the dividend, and one from two is one, so there is one decimal place in the quotient.

Divide 75 by .25 (remember 75 whole ones).

The dividend must contain as many decimal places as there are decimal places in the divisor. If not, then add enough ciphers to supply the shortage, as follows:

```
.25 ) 75.00 ( 300
      75
      --
       0
       0
```

There are the same number of decimal places, two, in the divisor as in the dividend in the above example; so two from two leaves nothing, therefore, there will be none in the quotient. To prove an example in division multiply the quotient and divisor, and if correct the product will equal the dividend; thus:

```
  .25
× 300
------
75.00 = dividend
```

Divide 81.6 by 3.6 = 22.66 2-3.

675 ÷ .15 = 4500.

.952 ÷ 4.76 = .2.

88.476 ÷ 1.2 = 73.73.

.0026 ÷ .003 = 8 2-3.

If 64 tons of iron costs $4,816, how many tons can be bought for $1,730.75? Ans. 23 tons.

Note.—A decimal that will not divide an equal number of times, or has a remainder, is called a *repeating decimal,* that is, you could keep on dividing forever with the same result. Whenever you come to one of them just work it out to two or three decimal places, which is close enough for all practical purposes. For example, 1-3 to a decimal.

```
3 ) 1.000 ( .333+
    9
    -
    10
     9
    --
    10
     9
    --
     1
```

.333 is the decimal fraction for 1-3. Do you see that you could keep on dividing forever and have the same result?

Note.—If the number of figures in the quotient be *less* than the excess of the decimal places in the dividend over those in the divisor, the deficiency must be supplied by *prefixing* ciphers.

If there be a remainder after dividing the dividend, annex ciphers and continue the division: the ciphers annexed are decimals of the dividend.

Note.—In common fractions the unit may be divided into halves, thirds, fourths, fifths, sixths, sevenths, eighths, ninths, tenths, elevenths, and so on indefinitely. In decimals the division of the unit starts with tenths—one-tenth, two-tenths, three, four, five, six, seven, eight, nine—*tenths.* The next lower denomination of divisions is 100ths. One one-hundredth (1-100) means *one* out of hundred, the unit is divided into 100 equal parts and the one is *one* of the 100 parts. The numerator can then be 1 to 99 of the 100 parts. Ten-tenths is a whole one; so is 100 100ths a whole one; 5-10 is ½, so is 50-100. The next lower denomination of divisions is 1000 of which it takes 1000 parts to make a whole one. .5, .50, .500 are all the same thing, being equal to ½. In the first decimal 10 is the denominator and 5 represents 5 of the 10 parts, and as 5 is one-half of 10, the fraction must be ½; in the second decimal the denominator or unit is divided into 100 equal parts; .50 represents the numerator and shows how many times

the denominator is to be taken, that is, 50 of the 100; 50 being one-half of 100 it must equal the fraction ½. When the uuit is divided into 1000 parts, 500 of those parts would be equal to one-half, since 500 is one-half of 1000. .25 is equal to the fraction ¼, since 25 is contained in the denominator 100, 4 times. .250 is also equal to ¼, since 250 is contained in 1000 4 times. .75 is ¾, so is .750 equal to ¾. .125 is equal to the fraction ⅛, since 125 is contained in 1000 8 times. If .125 is equal to ⅛, 3 times .125, or .375 must equal ⅜, and 5 times .125, or .625 must equal ⅝.

When 10 is the denominator, the numerator may be from 1 to 9; when the denominator is 100 the numerator may be from 1 to 99; when the denominator is 1000, the numerator may be from 1 to 999, and so on.

ELECTRIC PROPERTIES CO.

The Electric Properties Co., incorporated May 10, under the laws of the state of New York, with a capital of $6,000,000 preferred and $6,000,000 common stock, has been organized to acquire, finance and develop properties, either whole or in part, especially those in which electricity plays the principal part, such as power, electric traction and electric lighting enterprises, and to invest and deal in and to guarantee the securities of corporations operating such properties. It will also conduct through Westinghouse, Church, Kerr & Co. (all of whose capital stock is owned by the new company) a general engineering and construction business. It may also issue collateral trust bonds secured by the pledge of securities acquired in the course of business.

The purposes of the company, as mentioned above, will be mainly financial. It is not intended to make any changes in the organization or personnel of Westinghouse, Church, Kerr & Co., whose operations have been highly successful and they will continue to be conducted under the efficient administration of Mr. Walter C. Kerr, president.

While the Electric Properties Co. will avail itself of the engineering and construction organization of Westinghouse, Church, Kerr & Co., it will also use other engineering organizations or independent consulting engineers as circumstances may require. One of the objects of the new company will be to co-operate with vested interests, such as railways and other public service companies, in the development of properties for their account, and either temporarily or permanently assist in financing such properties.

The great rapidity with which the uses of electricity are being extended, not only in the creation of new enterprises, but in changing the character of existing enterprises, will, it is believed, afford constantly increasing opportunities for the profitable investment of capital. Mr. John F. Wallace has been selected as president of the new corporation, and two vice presidents will be elected at the first meeting of the board of directors.

The following gentlemen constitute the directorate, all of whom will be actively interested in the conduct of the business of the Electric Properties Co.

Charles H. Allen, vice president, Morton Trust Co., New York; Paul D. Cravath, Cravath, Henderson & De Gersdorff, New York; H. D. Giddings, New York; N. W. Halsey, N. W. Halsey & Co., New York; George C. Smith, vice president, Security Investment Co., Pittsburg; John A. Spoor, president, Union Stock Yard & Transit Co. and president, Chicago Junction Railway Co., Chicago; Moses Taylor, Kean, Van Cortlandt & Co., New York; E. G. Tillotson, vice president, Cleveland Trust Co., Cleveland; F. D. Underwood, president, Erie Railroad, New York; R. B. Van Cortlandt, Kean, Van Cortlandt & Co., New York; John F. Wallace, president, Electric Properties Co., New York; George Westinghouse, president, Westinghouse Electric & Mfg. Co., Pittsburg.

The headquarters of the company will be at 111 Broadway, New York.

The Southern Ship Building Co., Jacksonville, Fla., has completed the barge building for the Havana Coal Co.

IS STEAM DOOMED?

In *Engineering*, London, there are many details of the application of gas for driving engines of ships, and the facts suggest the question as to whether steam for this purpose is doomed. Prof. Capper has stated that the theoretical maximum thermal efficiency of the steam engine is only 30 per cent, and only from five to 20 per cent of the heat generated is ever turned into useful work. In the case of the gas engine the theoretical efficiency is about 80 per cent, and in practice 25 to 30 per cent of heat developed in the cylinder is turned into useful work. For vessels fitted with small-powered compound-condensing engines of less than 100 H. P., the fuel consumption will be from two to three pounds per indicated horsepower. For gas plants of this power the fuel consumption will be less than one pound per indicated horsepower. For larger powers, of not less than 500 H. P., the economy will not be quite so marked, but will be about as follows: Steam plant, say, 1.6 lb. per indicated horsepower; gas plant, say, 0.8 lb. per indicated horsepower. At this figure of one-half, the gas plant should be well worthy of adoption, from an economical point of view, as, in other words, the same coal will do double the work. The stoking and cleaning of the fire of the producer are much less than would be required for a steam boiler of the same power, the stoking being practically automatic, and practically the whole fuel, other than the clinkers, is consumed. From the plants made, and from designs that have been got out for moderate powers, it would appear that the space occupied by the gas generator and engine is about the same as the steam plant; but for large powers, where a double-acting gas engine is employed, the weight will be considerably less, as the engine will be about the same weight as the steam engine, and the producer will be very much lighter than the boiler. The official report of the trials of a small vessel fitted by Messrs. Thornycroft, and illustrated in *Engineering* shows that this boat of 16 tons displacement ran at an average speed of 10 miles per hour for ten hours, on a consumption of 412 lbs. of anthracite coal. Several tugs, boats, and other vessels have been fitted with similar engines to the one illustrated, and are at the present time running on the Continent on the inland waterways; but, as far as is known, the Emil Capitaine was the first vessel fitted with a gas engine and producer to run in the open sea. To demonstrate the possibility of using gas plants for large powers, Messrs. William Beardmore & Co., who are joint owners with Messrs. Thornycroft of the British Capitaine patents, are constructing sets of engines of 500 and 1,000 H. P., to run at a speed of about 130 revolutions per minute. According to Mr. W. W. May (Messrs. Beardmore & Co.'s engineer), in a 7,000-ton cargo steamer there would be a saving of 13,000 cu. ft. of cargo space, besides a considerable gain in weight.

SPEED OF VESSELS IN SHALLOW WATER.

The speed of vessels in shallow water is a subject that is now an important one on account of the controversy over the design of the Panama canal. As there is much misapprehension concerning it, it may be well to note that the first important investigations were made by Capt. A. Rasmussen, of the Danish navy, who described his experiments with a torpedo boat in an article in *Engineering* of Sept. 7, 1894. He found that at half power his boat made 5¼ knots less speed in 15 ft. of water than in 48 ft., but at full power the speed was 1¼ knots greater in 15 than in 48-ft. depth. These results were confirmed a year later by Col. Guiseppe Rota, whose paper describing his experiments was published in the *Transactions* of the Institution of Naval Architects. These and later

results obtained by Capt. Rasmussen, were so important to designers of shallow draught boats that they received careful attention and Sir John Thornycroft made experiments with a steamer drawing 10 in. of water in the shallow stretches of the Thames. He found that at full power the boat made better speed when running over a mud flat with only a few inches of water under her bottom than in the deeper channels. These and many other experiments are reviewed by Mr. Sydney W. Barnaby in the Watt Anniversary lecture, delivered on Jan. 19 of this year. The importance of the relation of depth of water to speed is very great, owing to custom of rating war vessels by speed trials over measured courses; if these courses are not in deep water the results of the trial runs at different powers are decidedly misleading. Mr. Barnaby calculates that a 780-ton, 33-knot destroyer would do best in shallow water when the depth is about 32 ft. and that in deep water the resistance would be normal at about 150 ft. A vessel of similar form but larger and capable of 36 knots would probably do best in shallow water of 36 ft. depth, while about 170-ft. depth would be required for normal deep-water speed. Attention is called to this important aspect of shallow water navigation, because it has been very largely overlooked in discussions of canal questions. The data on the subject are quite voluminous and surprisingly concordant.

STATE OF SHIP BUILDING INDUSTRY.

The director of the census announces the result of the tabulation of statistics of ship building, exclusive of government establishments, for the calendar year 1905. The figures indicate that there has been a fair increase in the ship building industry as compared with the statistics of 1900. The capital investment in the industry has increased from $77,362,000 to $121,625,000. The number of wage earners employed has increased from 46,781 to 50,754. The total value of the products of the ship building industry in 1905, including rigging, calking, repair work and value of the year's work on incomplete vessels on the stocks, aggregated $82,769,239, as compared with $74,578,158 in 1900.

During the year 1905 2,245 vessels of five tons and over were launched. Their gross tonnage is fixed at 645,330 and their value at $58,452,629. The value of the vessels of the same class launched in 1900 was $35,735,914 and the number was 2,087 with a gross tonnage of 687,681. Small boats under five tons to the number of 26,881 were launched in 1905, as compared with 15,448 valued at $1,972,825 in 1900.

NEW B. & O. STATION AT SANDUSKY.

The Baltimore & Ohio railroad last week sent out plans and specifications to contractors at Sandusky, O., and adjacent cities for bids for the new passenger station that is to be built between Market and Washington streets, Sandusky. All the bids are to be in by noon May 25, and it is probable the contract will be awarded soon after that time. The new station will be thoroughly modern in design, and arranged to provide first class accommodations to the patrons of the road. It is estimated that it will cost somewhere between $10,000 and $15,000. It will be built of plain brick with facing of gray pressed brick, corners of lighter shade cut stone trimmings, and tile roof. The foundations will be of concrete. The interior arrangement will include a large general waiting room in the center 28 x 36 feet, with the ticket office and women's waiting room on one side, and the smoking room and baggage room on the other. Ample toilet facilities will be provided. The building will be heated throughout by low-pressure steam heating system, and will be lighted by electricity. Spacious platforms will be provided, running from Market to Washington streets. It is believed that, when completed, it will be a most attractive station.

EFFECTS OF THE EARTHQUAKE AT THE UNION IRON WORKS.

A survey by the underwriters shows that the earthquake of April 18 did considerable damage to the vessels at the Union Iron Works, San Francisco. The two freight vessels, Mexico and Columbia, in course of construction for the Hawaiian-American Steamship Co., were thrown forward four and a half feet in their cradles and suffered about $15,000 damage apiece. The Harriman steamship Columbia was on the dry dock and was thrown over to one side, wrecking the dock and causing about $100,000 damage to the vessel. The dock and ship sank afterwards.

A pair of shear-legs followed the steamer City of Pueblo and did about $15,000 damage.

DUPLICATE OF KNUDSEN.

The enterprise and foresight shown by Statsraad Gunnar Knudsen, of Norway, in building last year the Chr. Knudsen, the first of Sir Raylton Dixon & Co.'s patent cantilever-framed self-trimming ships to be employed in the important coal trade of the Dominion Coal Co., Ltd., of Sydney, Nova Scotia, proved to be so fully justified by the results, especially in the rapid discharge—at the rate of 1,000 tons per hour—that this company at once offered charters for six more of the same type, to be ready for this year's service. Of course, the six vessels had to be built, but the Norwegian ship owners who have managed to secure a hold on this business did not hesitate to place orders for that number with Sir Raylton Dixon. The Borgestad, launched on May 7, is the second of the type, and the others are to follow with all despatch. They are 7,000 tons deadweight, built on the improved cantilever-framed patent of Messrs. Harroway and Dixon with which is combined the patents of Mr. John Priestman and Messrs. Livingston & Sanderson. Their draught is 23 ft. 1 in., and their net register only 2,500 tons. By the adoption of the cantilever system and bulb angle sections, all beams and pillars are dispensed with, and clear holds, with large hatchways, permitting unusually quick discharge—at the rate of 1,000 tons an hour in fact. The engines are placed aft, and are of the usual triple-expansion type, while the side tanks not merely trim and ballast the ship, but constitute strong box girders along each side, and thereby add to the rigidity of the hull. The success of the first ship has brought other orders in from British and Australian owners for similar vessels, likewise intended for the coal carrying trade.

OBITUARY.

Capt. Robert C. Chamberlain, of Detroit, master of the steamer Charles Reitz, died last week at the German hospital in Buffalo as the result of a stroke of apoplexy sustained while the steamer was outside the breakwater bound for Toledo. The mate assumed command and took the steamer back to port.

The new steamer D. Z. Norton unloaded her maiden cargo of ore at the C. & P. docks, Cleveland. The superintendent of the docks was delighted with the ease with which she was unloaded through the new style of hatch. No difficulty whatever was met with in reaching all the ore. No effort was made to establish any record in unloading; nor was any test made as to how much ore might be taken out of her in a given time; but later in the season this type of ship will be given a very thorough unloading trial.

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FOREIGN-BUILT DREDGERS.

Congress is now recognizing that the construction of foreign-built sea-going dredging ships is clearly an evasion of the United States shipping regulations and is seeking to provide definite laws for the future so as to prevent introduction hereafter into American waters of this class of foreign ship building. A year ago this journal first took occasion to call attention to the fact that over a million dollars in value of this class of ship construction had been brought from abroad and placed in use in Galveston. In these times when every ship building company in America needs the few rare contracts in sight it is then a manifest injustice that builders of foreign dredger ships should send their products over here, and that they should escape all customs dues as a manufactured product, and should be able to place them under the American flag when our laws distinctly state that no foreign built ship shall wear the American colors. Yet this feat was accomplished by the purchasers—and these ships fly the American flag—because some official in Washington ruled that a dredging ship was not a ship; consequently shipping laws did not apply, and it was a matter of indifference what colors they should decide to use.

Recent events in congress indicate that the legislators have awakened to what possibility the future evasion of this law may mean; and in the disagreements over the measure which have occurred between the house and the senate, it would appear that we are to finally have a law which will cover the contingencies of the future, even although it may not correct the injustice done American builders by the past Galveston contracts. In the minds of a great many of the legislators there is the thought that it would be decidedly unwise to in any way handicap the earnest efforts being made by the great port of Galveston to repair its damages created by the floods and hurricanes of a few years since; hence in framing a new law there are not many who would care to see it made retroactive, so that dredgers already in use at that port should be stopped or penalized. In the future the plan evidently is, to so phrase the law that these foreign ships shall not go about into other American harbors doing work, nor shall other foreign built dredges be permitted to come in.

All friends of American ship building would further hope to see the bills in congress made so broad as to cover the possibility of limiting to American builders the construction of dredgers for our insular and canal zone possessions.

Owing to the neglect of some matters of interparliamentary custom between the senate and house the bills concerning foreign dredgers have recently been brought into greater prominence, and the following extract from the *Washington Post* would indicate the general range of the discussion:

Owing to the abuse of the power lodged in its conferees, sometimes exercised to insert in proposed legislation matter foreign to the intent of either branch of congress, the house some time ago changed its rules so as to require the printing in the record of all conference reports before they could be called up for consideration. This was manifestly to enable members to know exactly what was provided in the report. Such is now the rule of the house, but in nine cases out of ten such reports are never read. One was made to the house last week, however, that promises to receive more than the usual perfunctory attention. It is a conference report from the managers on the part of the house representing a bill favorably reported from the committee on merchant marine and fisheries. This bill, as it passed the house, provided that a foreign-built dredge shall not, under penalty of forfeiture, engage in dredging in the United States unless documented as a vessel of the United States. This is a simple, straightforward enactment, about which there could be no possible doubt. A proviso was added that "this act shall not apply to any foreign-built dredges now at work under contract in the waters of the United States."

This proviso was intended to apply to four foreign-built dredges now at work at Galveston. When the bill was passed by the senate, this proviso was struck out and a new section added, as follows:

"That the commissioner of navigation is hereby authorized and directed to document as vessels of the United States the foreign-built dredges Holm, Leviathan, Nereus, and Triton, owned by American citizens and now employed at Galveston, and the dredge Sea Lion, now under construction abroad for use at Galveston, on which an American citizen, the contractor at Galveston, has an option."

The house did not agree to this amendment, and sent the bill to conference. May 11 the conferees on the part of the house submitted a report showing they had yielded to the senate, and recommended that the house agree. The statement of the conferees was that "the difference between the bill as it passed the house and the bill as it passed the senate is an amendment offered by the senate exempting from the operation of the first section of the bill certain dredges now engaged in the work of the Galveston harbor. The senate added to the list of names one called the Sea Lion, and the house disagreed to that amendment.

Members of the house who are opposed to extending an American registry to these foreign-built dredges have discovered that the statement of the conferees does not fit the case at all. At least, that was their claim yesterday, and there may be, it was intimated, some public reference to this fact.

The house bill exempted "any foreign-built dredge now at work under contract," etc., but the senate bill gives American registry to these vessels. The house bill did not, as set out in the statement of the conferees, name the dredges. The senate, therefore could not have added to these names "one called the Sea Lion," and this, therefore, was not the only name disagreed to by the house. It is further claimed that the addition of the name of the Sea Lion to the list of dredges "now engaged" at Galveston is incorrect, because the senate amendment not only includes such dredges, but also the Sea Lion, which is building abroad.

Members opposed to admitting foreign ships to American registry claim that the use of the word "exempting" in the conferees' statement is totally misleading, for the reason, as they claim, that it con-

ceals the fact that the bill, as sought to be agreed to, actually gives American registry, and would permit these dredges to work anywhere in the waters of this country instead of limiting that privilege to the Galveston contract, and that contract only.

WRECKING WORK ON THE MATAAFA.

The work of wrecking the steamer Mataafa, on the beach at the door yard of Duluth, depends wholly on the weather. She is lying on the beach just outside of the harbor and is in such a position that every northeaster which comes up practically puts a stop to the work and throws water into the stern at so rapid a rate that the stern goes to the bottom every time this happens. The [illegible] be abandoned [illegible] stern again sank to the bottom. At the time of [illegible] pumps are again at work on the stern, and it is being raised, but just when she will be taken off the beach is problematical and, as was said in the beginning, it depends wholly on the weather. A high southeast wind prevailed today, but that kind of wind, or any off-shore breeze has no effect on the wreck. The northeaster is the one which does the mischief. If the weather remains favorable it will take up but a little time to take the wrecked steamer off into deeper water and brought inside the harbor. To clear the sand away from the lake side of the craft, Capt. Reid has been hitching tugs onto her and thus held they work their wheels just fast enough not to pull on her, but to wash the sand away. It seems to be successful, too.

TO BE LAUNCHED SATURDAY.

William M. Mills, manager of the Niagara Transit Co., has completed the final arrangements for the launching of the company's new big steel freighter Charles Weston at the yards of the American Ship Building Co., Bay City. The big vessel will slide from the ways sharply at noon on Saturday, May 26, and will be witnessed by a delegation of about seventy-five prominent persons from Buffalo and the two Tonawandas. Miss Mary E. Weston, young daughter of Charles Weston, Buffalo, will be sponsor. The launching party will [illegible] on one of the [illegible] at the Bay City Club. The launching party will remain in Detroit Sunday, returning home Monday morning. The Charles Weston is the sister vessel to the freighter William A. Rogers, owned by the Niagara Transit Co. She is 569 ft. in length over all, 549-ft. keel, 56-ft. beam, and draught of 31 ft. She will carry iron ore to the ore docks of the Buffalo & Susquehanna Iron Co. at Buffalo all season.

The schooner J. J. Barlum was beached on Whitefish point last week after nearly foundering in Lake Superior in the northwest blow. The Barlum was being towed from Michipicoten to the Canadian Sault by the Leafield when the sea became too much for her.

LAUNCHING THE SIR THOMAS SHAUGHNESSY.

Anyone who chanced along Fort street in Detroit on Saturday morning last would have known that something unusual was stirring. Special cars were standing in a slip and were being boarded by a considerable number of persons in gala attire, one especially who seemed to be the center of attention carrying an enormous bunch of American beauty roses. They all boarded the cars with the exception of one man who stood on the sidewalk and made numerous inquiries concerning the whereabouts of James P. Walsh. These inquiries reflected [illegible]

boat as lake boats go now, nevertheless loomed large upon the stocks. She was very ably christened by Miss Inez Matthews, of Toronto, niece of Sir Thomas Shaughnessy, president of the Canadian Pacific railroad.

At the conclusion of the launch, the launching party returned to the Detroit club as the guests of the American Ship Building Co. where luncheon was served. Mr. C. E. Kremer, of Chicago, than whom there is no better toastmaster, presided. He stated that what was America's loss was Canada's gain in the transfer of Sir Thomas across the border. Sir Thomas is a product of Wisconsin and one of her most illustrious sons. He regretted the absence of Sir Thomas who was at that moment returning from Europe on another new ship, the Empress of Britain, but was gratified to call upon Mr. A. D. McTier to represent him.

Mr. McTier, however, in responding disclaimed all responsibility in representing Sir Thomas, claiming that Sir Thomas has a habit of representing himself and of defending his own views even when they differ from the views of everyone else. After complimenting the ship building company on the most successful launching, he suggested that Mr. H. B. Timmerman, the general superintendent of the Canadian Pacific might represent Sir

[illegible] to the sponsor.

"I am now going to present to you," said Mr. Kremer, "the president of the Lake Carriers' Association, West Virginia, the longest president the Lake Carriers' Association has ever had."

Mr. Livingstone was quite equal to Mr. Kremer's banter and returned all that he gave. After a few facetious preliminary remarks he made an excellent speech detailing the growth of lake commerce since the early days, putting special emphasis upon the fact that no one even so late as four years ago, would have predicted the 10,000-ton ship which has now become so common as to excite no interest. He also referred to his efforts in defeating the many attempts to bridge the Detroit river.

Mr. W. R. Gilbert was then introduced and proposed a toast to Mr. C. O. Jenkins for whom the ship is building.

It remained for Mr. James C. Wallace, to cause the audience to "sit up and take notice," as the saying is. He discussed the types of ships now building with special reference to expedition in loading and unloading and called attention to the magnificent record of the Corey during the great November gale on Lake Superior. She passed through it very creditably and the most exhaustive examination of her hull proved that she was not weakened a bit in the storm by reason of her construction. The Corey has thirty-four hatches, spaced 12-ft. centers. [illegible]

[illegible]

Saturday at the [illegible] Building Co. for Mr. H. K. Oakes and others of Detroit. The vessel was christened by Miss Adine Earling, daughter of Mr. E. J. Earling, after whom the boat was named. The launching party went to Superior from Milwaukee in a special car over the Wisconsin Central railway. In the launching party were: Mr. E. J. Earling, Miss Adine Earling, Mr. and Mrs. H. B. Earling, Mr. Everett Earling, Miss Dean Earling of Milwaukee; Capt. and Mrs. Dennis Sullivan of Chicago; Mr. and Mrs. H. K. Oakes, Mr. and Mrs. B. F. Berry, Mrs. H. P. Carroll, Mrs. Edgar S. Paxton, Miss Isabelle Cheney and Mr. Wm. Gage of Detroit.

The new steamer will be operated by the Franklin Steamship Co. In appointments the Earling is one of the finest on the lakes. Her cabin accommodations are designed for a party of ten and are luxuriously furnished. The Earling is 545 ft. over all, 525-ft. keel, 55-ft. beam, and 31 ft. deep. She has thirty-two hatches, spaced 12-ft. centers. Her engines are triple-expansion with cylinder diameters 23½, 38 and 63-in. by 42-in. stroke, supplied with steam from two Scotch boilers, 14 ft. 6 in. by 11 ft. 6 in., equipped with Ellis & Eaves draft and allowed 180 lbs. pressure. At the conclusion of the launch the launching party was entertained at luncheon at the Superior Commercial Club, leaving for Milwaukee late in the afternoon.

[illegible] company lay wholly within the [illegible] of Michigan, though it has now extended its operations upon other ranges. Its activities, however, are still largely in the upper peninsula of Michigan.

The car ferry Saint Ignace is at Ecorse, undergoing repairs in the new floating dry dock of the Great Lakes Engineering Works. Commodore L. R. Boynton, who probably knows more about car ferry service than any other man, accompanied the Saint Ignace on her trip to the ship yard.

The steamer Eugene Zimmerman has been released and her cargo of coal delivered to the Algoma Steel Co.

WRECKING THE STEAMER CRESCENT CITY.

The work on the steamer Crescent City, ashore at Lakewood, eight miles from Duluth, had to be suspended because of the sickness of the entire crew there from ptomaine poisoning. W. W. Smith, marine superintendent of the Pittsburg Steamship Co., who has personal charge of the work, is one of the sickest and several others are also seriously ill. Just when work will be resumed cannot be said at this time. The steamer, which is high and almost dry on the beach, has been moved about six feet. Meanwhile the wrecking steamer Reliance, belonging to the Duluth-Superior Sand & Gravel Co., is clam[illegible]

conditions. The firemen are a part of the Longshoremen's association and it is understood that the officers of the Longshoremen's association would not countenance a strike under any circumstances. Labor conditions may therefore be regarded as settled for the next two years. It was a wise thing to make a biennial contract. During the week agreements were reached with the men aboard tugs and with the grain scoopers which, with the exception of the firemen, were the only two outstanding. On the whole, labor has got the better of the bargain, for while they have not received direct advances [illegible] have obtained concessions contributing to

[illegible] reading [illegible] mines have not quite surmounted the difficulties imposed upon them by the strike. However, everything will be well under way by the end of the week. Vesselmen would prefer that the legal holiday which occurs in the middle of next week might be dispensed with, but as this is impossible, they will have to put up with the inevitable bunching of carriers again.

FREIGHT SITUATION.

Lake trade is running smoothly again and no further trouble is anticipated. The firemen have not reached a definite agreement with the Lake Carriers, but they are at work and are being paid upon last year's schedule. The men aboard ship are not taking an active personal interest in the referendum vote to accept or reject the Lake Carriers' proposition to pay last year's wages. It is reported, however, that the firemen ashore are generally voting to reject it, but it is clear that such rejection would not carry weight as long as the men aboard ship, that is the men with jobs, are satisfied with present

Superintendent A. A. Schantz of the Detroit and Cleveland line is offering a season pass good for two on his line to the person that hits upon an acceptable name for the new steamer. Names of persons and flowers are barred and the name to be selected must pertain to either Michigan or Ohio.

STRENUOUS TEST OF THERMIT.

On July 28, 1905, the steamer Apache, of the Clyde line, was placed in the large graven dock belonging to the J. W. Robbins Co., at Erie Basin, Brooklyn. At some date previous she had grounded and had broken the shoe or skeg. The break was welded on the above date by the Thermit process, since which time she has been in continuous service, until her last trip. Upon her last voyage, while en route to New York, and when in twenty-three fathoms of water, her propeller struck some submerged object. The shock was sufficient to be felt over the entire boat, and the engines were immediately stopped. After an examination it was found that the propeller shaft had been badly bent, so as to cause the wheel to revolve in an eccentric manner, one fluke of the wheel striking the shoe or skeg. Apparently the wheel and shaft were intact, and it was decided to proceed under reduced speed. The engine was then started; it was found that with each revolution the propeller wheel struck the shoe a heavy blow, and it was necessary to reduce the revolutions to one-half speed. This condition continued for ten hours, when the shaft was finally broken off, and the wheel lost. During this period of ten hours, running at one-half speed, or about 75 r. p. m., the number of blows delivered upon the welded shoe by the propeller would have been about 45,000, the force of which would have been sufficient to give the weld a very serious test. The Apache arrived in port and was dry-docked on the 18th inst., and upon examination the weld was found in absolutely perfect condition, and had stood the enormous and unusual strain above described without showing any signs of deterioration. Ship owners who go to the expense of having broken stern frames replaced by new ones, losing weeks of valuable time, would do well to investigate the process under which this shoe was repaired, which for simplicity and efficiency and the promptness under which repairs can be made, has no equal.

FOR A $10,000,000 BATTLESHIP.

By a vote of 135 to 103, the house of representatives declared last week in favor of a proposition to the committee on naval affairs for the construction of a battleship to cost $10,000,000 and to be larger and faster than anything afloat when she is completed. The vote was taken after four hours of very lively debating, most of which was against the proposed ship.

The friends of the proposition contented themselves with little argument, and most of what they did say was along the line of maintaining the efficiency of the navy. They declared that the language of the bill, "for the further increase of the navy," was inaccurate. It was not intended to increase the navy, but the older fighting ships were far behind the times, and were losing their efficiency. In order to keep the navy abreast of the times and able to meet whatever emergency might arise, it was necessary to construct ships that could cope with the new construction of other navies. That was the intention of the provision of the bill. Battleships and cruisers of our navy will soon be going to the scrap heap, where England is already sending so many of her obsolete vessels. When that takes place we must have new ships to take their places, so that the fighting line may be ready for what may come. Such was the burden of the arguments made by those in favor of the big warships.

Chairman Tawney, of the appropriations committee, made the most vigorous attack on the proposition. Mr. Burton, of Ohio, has moved to strike the provision from the bill. Arguing for the motion, Tawney said:

"We have now under construction 38 vessels, aggregating 384,720 tons, and we have on the navy lists 270 vessels aggregating 711,202 tons. In other words we are constructing 50 per cent as much again displacement as we already have. I insist that there is absolutely no necessity, in view of these facts, for authorizing another battleship at this session.

"They talk about the Panama canal being the greatest undertaking in the world. Yet the fifty-seventh and fifty-eighth congresses appropriated twice as much for the naval establishment as the canal will cost at its highest estimate. Those two congresses spent for the navy $388,107,000.

"We are spending today on account of wars we have had and in anticipation of wars we may have, twice as much as the canal will cost. The appropriations for the current year on account of past wars, principally for pensions, are $175,957,638. In anticipation of wars to come, that is, for the military and naval establishments, we have appropriated for the current year $199,702,081. So we are spending this year $375,659,719 because of the wars we have had or may have. We are spending this year 63¾ per cent of the total revenues of the government, except internal revenue, for the maintenance of the military and naval establishments."

As Tawney began to read the detailed statements from which these summaries were made, Mr. Vreeland interrupted.

"Have you made up a statement of what lack of preparedness has cost us?" he demanded.

"No," replied Tawney, "but we are spending this year in anticipation of war $20,000,000 more than the total revenues of the government were in 1897, the year before the Spanish war. I say that it will soon become absolutely necessary for congress to do one of two things—either to curtail the expenditures in preparation for war or increase taxes and curtail expenses for internal improvements.

In support to his motion Mr. Burton read a list showing that in November, 1905, the naval construction of the United States then under way exceeded that of Great Britain by 80,000 tons, and that of Germany and France by 10,000 tons.

"We have already provided for construction for four years to come," he said, "and with the average delays it will be 1912 before the ships now under way are commissioned. No man can tell what changes in naval architecture will have been made by then, and, what is more important, no man can tell what improvement in the relations between the nations will have occurred then. If that improvement progresses as rapidly as it did in the first years of the century, we may well hope that by that time the great powers of the world will have reached an agreement to put a stop to this increase of armament."

Mr. Bartholdt, of Missouri, offered an amendment providing that if at the approaching Hague conference an agreement for disarmament or to stop further increases of navies was reached, the president should have discretion not to build the proposed ships. This was emphatically beaten without a division.

The Lake Carriers' Association reached an agreement with the Grain Scoopers' union last week whereby the old rate of $2.12 for 1,000 bu. will be paid for shoveling grain at Buffalo. The scoopers will, however, be paid $1 per 1,000 bu. extra for all grain that is handled between six o'clock Saturday evening and seven o'clock Sunday morning. Minor changes were made in working conditions somewhat more favorable to the men.

Active work has been begun by Major W. B. Judson, United States engineer, for the completion of the north pier of the entrance to Milwaukee harbor. The cement protection of the harbor will be lengthened 200 ft.

WORLD'S LARGEST SAILING VESSEL.

The greatest sailing ship in the world, the five master R. C. Rickmers, has left her anchorage near Stapleton, S. I., and has moved up to her berth at Constable Hook, near Bayonne, N. J., to load a million gallons of oil in cases for Saigon, tucked away in Cochin China in Southeastern Asia. When this big vessel moves about in port her owners do not have to summon tugboats to maneuver her about the harbor, for in the stern is a triple expansion engine that can send her through smooth water at a speed of ten knots an hour. American owners have ere this tried the experiment of putting auxiliary steam power into deep water square riggers, but without success. There were quite a number of these Cape Horn pigeons thus equipped, and the old summer visitors along the coast well remember the vision of four masted fore and aft coal schooners steaming slowly against a head wind with sails furled, a thin stream of smoke rising out of the iron jigger masts. A variety of reasons mitigated against the success of the venture, chief among which were the expense and the clumsy nature of the old fashioned machinery. The small, compact, economical engine, the low coal burner of the present day, was unknown then. Indeed, it is not certain yet that this big ship, the R. C. Rickmers, will prove successful with such engines as are installed, though she will be operated under such abnormal conditions as to exempt the vessels of almost any other ship owner from comparison.

The house of Rickmers is known from Vladivostok to Hammerfest. The great fleet of blue watermen that fly the house flag with the white R on a blue field is as familiar in Bangkok and Shanghai as are the buff stacks of the White Star boats in New York. But a squadron of square riggers is not the only asset of the firm, for stretching over the earth in India and Cochin China lie the wide paddy fields of the Rickmers, not far from the land of Mandalay. Their tall ships, built in their own yards, carry out to the inscrutable East big cargoes of petroleum, a million or more cases every year, and bring back to Europe mountains of shimmering rice produced in their own fields—750,000 tons of it annually.

Not many ships sail the seas under such glowing colors, and so the success of the huge auxiliary cannot be estimated by any other standard than her own peculiar conditions.

To view the spars of the R. C. Rickmers rising like four ladders against the green hills of Staten Island does not inspire the old fashioned sailorman with any excess of enthusiasm. Her main yard is one hundred feet long, it is true; but it is actually no greater in size than those stretched across the decks of many a far smaller Yankee clipper of the days of 1860. The masts, too, suffer somewhat in comparison with the old clippers. The double topgallant yards look a bit overbalanced so far above the deck, while there are no tapering skysail yards to taper off the royals. The Rickmers in comparison to her size would seem to be under a jury rig to one of the old time Boston or Salem shippers of fifty years ago.

It is not the height of spar that holds the eye, but the amazing length of hull. From bow to taffrail there is 460 lineal feet, and fore and aft from the break of the poop to the topgallant forecastle runs a flying bridge eight feet above the main deck. Here, however hard the elements may batter the ship, the captain may take his constitutional along a straightaway equal to more than two city blocks. The number of masts, too (four of them square rigged, one with fore and aft sails only), offset the lack of height, for the amount of canvas stretched on the yards under full sail foots up a total of more than 5,500 square yards, or more than an acre of sail surface.

To handle such a multitude of yards in a short space of time when tacking or wearing, an entirely original set of brace winches was installed on deck, worked by hand, so that the crew, when putting the ship about, instead of stringing along in the waterways as in the fine old fashioned days of romance, cluster about the winch brakes and perform very similar gyrations to the old pump ship antics every evening in the wooden walled craft of years ago. So, too, the yards are hoisted with a separate set of halliard winches manned also by hand; and crape seemed to hang at last on even the grand old topsail halliard chanties, when a score of men tailing on athwartships in the waist drowned out the gale with their chorus.

But everything now must yield to celerity; grace and romance must go. And so on board the Rickmers one watch of scarcely a score of men standing about these fantastic machines can hoist all the topgallant sails at the same time in four and one-half minutes. At least this is what Captain Bandelin says, the senior ship master of the Rickmers fleet. Captain Bandelin also took pains to shatter the myth of the two captains on board, one in command, one representing the charterers. The ship is actually under the sole charge of Captain August Walsen.

Andreas Rickmers, though, the head of the great firm, is also making the voyage around Agulhas in the big ship, a perfect Santa Claus of the sea, with beard of snow. And he insisted upon taking along the senior skipper Bandelin for his counsel and his company. But the German laws do not allow the presence of passengers in sailing ships, and so Captain Bandelin was signed on as navigator.

"A captain to represent the cargo?" said Mr. Rickmers. "Umph. We brought across three thousand tons of water ballast. How would you like to represent that, hein? You think she is a fine vessel? But I built her, and I musn't say too much. The engines, you see, are triple expansion, and they were well tried out coming across. Bad weather nearly all the way. Westerly gales up to force ten in the scale, but she scarcely felt the seas. We steamed dead to windward against a fresh gale at five knots, and off the wind we got seventeen knots out of her. She has great length to run on. Mind now, if we don't get out to Saigon in less than seventy days I'll call it a poor passage."

One hundred and fifteen days from New York to Saigon would be an average passage, so that to make the voyage in seventy days the Rickmers will have to clip six weeks from that time. The doldrums cannot bother her any with her engines, and the steam steerer will handle her in good clean shape when running her easting down in the bad weather in the Southern Ocean. There are ten men in the engine and fire rooms, a large number for an auxiliary, though the engines develop 1,250 horsepower. In the ship's company there are fifty-seven men—thirty-four before the mast. That counts up nearly three score mouths to feed, and the commissariat rooms are as interesting as any part of the vessel.

Under the poop deck, in a great compartment on the starboard side, casks of preserved meat built up in a perfect rampart and vast galvanized iron chests, four feet in the cube and hermetically sealed, filled with standard navy bread, loom in the dusk like the defences of a siege. Phalanxes of hams and bacon swing thick under the carlines and the cabin stores glitter in glass jars, vegetables, jam, fruit, everything that modern invention can supply, all blocked off in racks, one compartment shining with air proof metal spheres like silver plated cannon balls, each enclosing an Edam cheese. And there can be very little doubt that if Captain G—, of H. M. S. D—,

that Marry tells about had been supplied with this ammunition he would have used it to cut away those topsail ties instead of the commonplace iron shot.

On the port side, under the poop deck, a monster wooden case, "backed, bolted, braced and stayed," puzzles the inquisitive mind till Captain Baudelin discloses the contents as a touring automobile of heroic size which Mr. Rickmers is taking out with him for excursions into the up-country of China and Japan. Bicycles on yachts at one time startled the phlegmatic nautical mind, but a motor car in a windjammer five hundred miles south of Good Hope is enough to take the wind out of anybody's club topsail.

The whole after part under the poop below is given up to a richly finished saloon, with heavy mahogany joiner work and figured blue silk hangings in the wall panels. A dining table with fourteen revolving chairs like a liner's occupies the forward end and handsome, brass bound portholes admit a perfect freshet of air. A wide, velvet covered divan extends around in a half circle at the extreme end of the saloon, following the curve of the stern, inviting comfort and repose with a book from the well stored shelves on board.

Captain Watson, the commander of the Rickmers, occupies a suite of three rooms, with bath, on the starboard side, all mahogany furnished, comprising bedroom, library and office, where the chronometers and other instruments are installed. These rooms are not like the "stateroom" pigeon holes in a liner, but cover each a space of fully ten by twelve feet. The engineers and stokers also have a bath under the poop, and there is a separate mess room for the petty officers, exceedingly well lighted and aired by a large skylight.

Yet there is nothing in this great ship that seems to be overdone; everything is business and nothing but business of the most scientific description. The hull is double riveted throughout, and at the conclusion of an even hasty inspection it seems perfectly reasonable to believe that the cost of the R. C. Rickmers approximates a million and a half marks, or nearly $400,000, which is the sum generally believed to have been invested in her.

On deck the appearance of the ship is even more remarkable than below. The poop extends forward beyond the mizzenmast, the last in most ships, but the third in this five masted mammoth, a distance of not less than 200 ft. Not so very many years ago this in itself would have made a vessel of very imposing dimensions. And then comes the procession of the great steel masts, with a gaping hatchway alternately till the forward deckhouse is reached, on top of which is secured the owner's private launch, a four cylinder, gasolene motor boat, 42 ft. long, built of solid teak.

Mr. Rickmers will use her as a yacht in the eastern harbors, as she is fitted with a detachable summer cabin aft and contains all the appliances to be found in a modern craft of her description. But there is also to the matter a commercial side, for when this powerful little vessel, built at a cost of $7,000 and capable of a speed of seventeen miles per hour, has discarded her gay attire she will tow oil lighters and barges from the ship when she is discharging to various more or less inaccessible points in the harbor.

On every side, then, there is some new and astonishing innovation on board the Rickmers, even to the Portland cement scuppers; and after half a day spent on board the visitor, however up to date, is obliged to reconsider all of his previous notions as to what a great deep water ship should be. The Rickmers is the ultimate word in sailing ships. She seems to represent the greatest heights that the modern ship builder can attain. It does not take long to stow even two hundred thousand cases of oil in a ship's hold, and in a fortnight or so the R. C. Rickmers will back out stern first into the Kill von Kull under her own steam and head down the main ship channel, drawing nearly thirty feet of water. She ought to be ready for sea by June 1, and the whole maritime world will observe her initial performance with unusual interest and await anxiously her reported passage through the Sunda Straits. Within thirty days from her departure she will have penetrated into the bad weather of the southern ocean in midwinter, and, while we here on Independence Day will swelter on the pudgy asphalt streets, the R. C. Rickmers, snugged down maybe to her upper topsails, snoring away through the hurricane snow squalls and the wildest seas in the world, will run her easting down on the arc of the Great Circle that will carry her far down into the southern winter, into gales that may stagger even her giant bulk, half a thousand miles south of stormy Agulhas.

DRY DOCK DEWEY IN SUEZ CANAL.

Sir Thomas Sutherland has gracefully performed a duty owed to all concerned in the navigation of the Suez canal, and in a letter of appreciation he draws attention to the successful way the Suez canal was navigated by the awkward and ungainly floating dock Dewey. When it is remembered that the Dewey is 500 ft. long, 154 ft. beam, and draws 8 ft. of water, though she stands 60 ft. high, and that the canal is in itself only a narrow cutting through sand with low banks, the difficulty of the task may be realized even by those having no experience of such an undertaking. But those who have passed up and down the canal in ships drawing 20 to 25 ft. of water will understand the extreme danger of the operation when it is stated that during a portion of the four days the huge dock was in the canal, very bad weather was experienced. The wind usually blows across the canal, and sweeps along in fierce gusts, such weather making navigation difficult even for liners driven by their own power with a hull deeply submerged, and a comparatively small side to present to the wind. It is therefore easy to imagine the trouble experienced by passing through a craft without shape below the water line, and with towering sides presented square-on to the gale, and without motive power independent of that provided by the tugs. The feat was undoubtedly a great one, and all concerned are to be congratulated and complimented upon its success, for, according to Sir Thomas Sutherland, the passage from Port Said to Suez was accomplished without any perceptible interference with the ordinary business of the company. It is explained that this was done by excavating two additional "gares" or stations at which ships can haul close up to the bank to allow craft to pass, and by taking advantage of the water space available at Lake Timsah, and at both ends of the Bitter lakes.

The German five-masted bark R. C. Rickmers completed her maiden voyage to New York last week. She is the largest sailing vessel in the world and was launched at Geestemunde, Germany, in February last. Her principal dimensions are: Length, 441 ft.; beam 54 ft. 3 in.; draught, 26 ft. 9 in. She is built of steel throughout. Though rigged as a sailing vessel the Rickmers is nevertheless equipped with a triple-expansion engine, capable of driving her when fully loaded at from six to seven knots an hour.

The Skinner Ship Building & Dry Dock Co., Baltimore, has been awarded contract to build a steel tug for the harbor board of Baltimore.

SHAPING THE COURSE.

By Clarence E. Long.

(*Continued from last week.*)

As the lead descends, the water is forced up the tube in obedience to a well-known law. It is simply that the volume of any given mass of air, or other gas, decreases in the same proportion as the pressure on it increases. The chemical action of the salt, where it comes in contact with the salmon color, turns it to a milky white (chloride of silver). This point of junction of the two colors, when the glass tube is applied to a graduated boxwood scale, tells the depth to which the lead descended. The sinker is "armed" in the usual way so that a specimen of the bottom is obtained at each cast. Nothing can be neater than this arrangement. Its advantages are as follows:

Let the speed of the ship be anything up to 16 knots an hour, or even upwards, bottom can be obtained at a depth of 100 fathoms without slowing or deviating from the course.

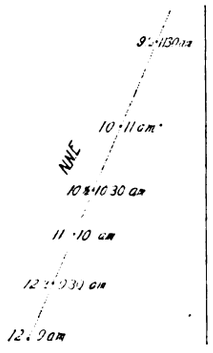
Instead of requiring all hands "to pass the line along" two men and an officer are sufficient to work it under all circumstances.

A cast can be taken in 100 fathoms, and depth correctly ascertained in from four to seven minutes, according to the speed of the ship.

This great labor-saving device admits of soundings being taken more frequently, thereby resulting in greater safety to life and property.

A regular "chain" of soundings, with correct "time intervals," is not only possible by this apparatus, but easy; and this latter is the sole method which can be depended upon to give the place of the ship with any degree of certainty, since a single cast is not only useless in the majority of cases, but is apt to prove mischievous in the extreme.

How to Use Compass, Log, and Lead in a Fog.—Take a piece of tracing-paper and rule a meridian on it. Take casts of the lead at regular intervals, noting the time at which each cast is taken, and the distance logged, or timed, between each two. The compass shows the course (which is not necessarily the course over the ground from a certain position on account of current, leeway, etc.). Now rule a line on the tracing paper in the direction of your course. Measure off on it by the scale of miles of your chart the distances run between casts. Opposite each cast note the time and the depth ascertained. It is a good thing also to add the character of the bottom. Now lay your tracing paper down on the chart, which can be seen through it, in the neighborhood of the position you believe yourself to be in when you made the first cast. Slip it about till you find an agreement between the soundings marked on the chart and the series marked on the tracing paper. If your chain of soundings agrees with those on the chart right under your course, all is right. If not, move the tracing paper about, keeping the meridian line due north and south, till you find the place on the chart where you can get that chain of soundings on the same course and at the same distances.



This is the only method by which a ship's position can be found with any certainty on soundings in thick weather. There is no excuse whatever for the man who runs his vessel ashore, if he has not tried this. It is a fact that there can only be one place on the chart where this set of soundings will agree with the distances between the soundings.

The great superiority of this method, when the navigator has to fall back upon soundings to ascertain his ship's position, cannot be too much dwelt upon. With the patent sounding machine there is no difficulty in putting it in practice.

Other sounding machines depend upon the principle of the rotating fly. A small cylinder, protected by brass guards, is caused to rotate in its descent through the water by vanes or blades set obliquely to its axis; this communicates motion, by an endless screw or worm, to a train of toothed gearing. On the machine reaching the bottom, an arm falls and locks the rotator, so that it cannot revolve the back way as it is pulled to the surface. An index points to figures on a graduated dial, which indicates the depth of water reached. These instruments are very good, but they nearly always possess what may be termed an index-error—that is to say, they either show too much or too little.

A patent sounding machine in operation on any lake vessel would prove indispensable for her safety in thick weather. The apparatus could be employed in several different ways: Many vessels are continuously employed in one trade, and consequently going over the same courses. If in clear weather, when passing the land aboard and on the right courses for making turning points, it would seem a good practice to take a series of soundings for some miles before and after making the turn in the course; also the sounding at the turning point. By keeping a record of this it could be referred to at any time it was necessary to do so. Should the vessel then be running the course in a fog, and the master desirous of verifying his position, or to ascertain if the vessel is making good the course, the sounding machine can be put in operation and its record of depths compared with those taken when the master was positive of the ship being on the right course. Even where this is not previously done, the chart will give the depths sufficiently accurate for the purpose of locating the vessel. Even a sounding taken at the turning point in the course will make a pretty good "fix" if the bottom is uneven. The sounding should have previously been taken to verify the one given on the chart.

To "fix" the position of ship by means of the safety curve on the chart, nothing could be neater or handier than this sounding machine to take the depths. When it is blowing a gale and snowing and freezing at the same time, and it becomes necessary to ask information from the bottom as to the ship's whereabouts, every seaman knows that the operation involves much labor and loss of time, and considerable peril. Carelessness in equipping vessels with proper instruments for coasting in thick weather, and the failure consequent upon it, of keeping a correct account of the place the ship is in, is the prevailing fashion of which owners are sometimes forcibly reminded when making good the losses by stranding.

The patent sounder can be used at any time and is so simple in operation, that after seeing it once or twice one cannot help but see fully into its working mode, and the pamphlet of directions which goes with each machine will render the instruction unnecessary. The sounding machine is quite expensive but its cost is very insignificant in comparison with the time and fuel to be saved, as well as the cost of bottom repairs.

As a matter of course, soundings are of little or no use where the bottom is nearly a level plane devoid of leading features. But those and similar deficiencies have to be made up by artificial aids in appropriate places approaching by vessels close to, in the choice of which aids and places some-

times serious mistakes are made, because the study of coasting in thick weather is neglected.

Coasting has always been considered an inferior branch of navigation, requiring no scientific study, because in clear weather, with land in sight, a familiarity with the coast is sufficient to keep clear of dangers and find the place the ship is in. But when land is out of sight, as in thick weather, the difficulty of keeping track of the vessel and clearing dangers comes in, a difficulty increased by the lack of proper training and the lack of proper instruments aboard vessels. On the ocean this, in a great measure, does not make such great difference, because the vessel is almost exclusively guided by astronomical observation, compass and log serving only as a makeshift during the intervals between observations, and therefore no great precision is required of them, more especially the log. This dead-reckoning on the sea furnishes only approximately the place the ship is in, because the correction for current, as a rule, is wanting. In thick weather such vague estimates do not insure the safety of vessels in the vicinity of land where the utmost precision in courses and distances is required, in order to avoid dangers, a precision not attainable by the instruments in use. When coasting on the ocean, astronomical observations are of no more use than they would be in our lake navigation.

That coasting is a neglected science is evident from the use in thick weather of a defective log and of soundings without system and a reliable basis, all of which inevitably lead to disaster, the numerous strandings of vessels in all parts of the world in proof thereof.

Verifying position in thick weather by the lead is sometimes one of the most intricate problems in navigation, and, therefore, needs a special course of study and training to solve it.

Whenever a vessel fetches the beach and strands, the cause is laid to the compass, which shows looseness of navigating principles. It is not all with the compass, for the log, the current, or the wrong application of any of the corrections can be the cause as well.

Every master knows that it is an impossibility to make the same course good every time, although he is almost positive that the course by compass is correct. This is more especially true with vessels running crossways of the lakes, instead of the length of the lakes; the current, which seems to follow round the shores on both sides, for from 20 to 30 miles from the shore, has a greater influence on the course, and is consequently more perceptible. Many and many is the time that the current has carried vessels 10 and 12 miles off their course in the run from Grand Haven to Milwaukee, a distance of about 80 miles. This had nothing to do with the compass but was the current, because of the opportunity to verify the course when coming out of the piers at Grand Haven as follows, and which was done in this case: The true course from Grand Haven to Milwaukee is W ⅛ S; the piers of Grand Haven extend into the lake in a true W ¾ S direction; coming out directly parallel with the piers and then porting ⅝ of a point by compass from the course as shown when parallel with the piers is bound to fetch Milaukee ahead, provided the course is steered and no effects from current or leeway, and the compass moves in exact coincidence with the ship's head. Had the above circumstance occurred at a time when the course at departure could not be verified it would be hard to determine whether the cause was from the compass or something else. In this case there was no wind to speak of during the entire run, though there was a good deal of it afterwards, which will account for the current. When in doubt as to whether it is the compass that causes the wrong steering or attraction in the cargo, or other effects, a couple of azimuths taken on that particular course will tell the tale. In the above occurrence the captain laid it to his compass, thinking something might have been changed in the wheel house during the run over. But this was disproved when he entered the piers at Milwaukee and noted the course by compass when he was parallel therewith. The piers of Milwaukee run true W ¼ S and within ⅛-point of the course from Grand Haven to Milwaukee. When the vessel's head was parallel with the piers and her head noted by compass, the course was within ⅛-point of the course that was steered the night before. This was positive proof that it was not the compass; it was either current or leeway, and as there was no wind it could not possibly have been the latter.

Boats have left Manitowoc for Ludington and set the course according to the piers as described above (in this case the course is true E ⅞ S and Manitowoc piers true east—port ⅞-point from the course as shown going out of the pier will fetch Ludington), and have made good their course until within 15 or 18 miles of the other shore; for when the high elevator at that point is picked up the vessel may be heading right for it, but the run in from the time this object is first made, the vessel's course would have to be altered gradually to keep the object ahead. It is not unfrequently the case that the course will have to be altered as much as a point and a point and a half, which again goes to show the effect of currents in the lakes. This would not be so bad were it constant or in the same direction, but this is not so, for it is just as apt to be running to the south'ard as to the north'ard.

This again goes to show that courses jotted down, as is the practice on the lakes, are not at all times to be depended upon, although the vessel may have gone over the same course several times. And, it is no less a fact, that the courses steered are always more or less influenced, sometimes considerably, by currents changing with the wind and weather; so that courses jotted down one day may be entirely wrong another day. The only invariable standard of courses, is the true course obtained from the chart, from which the courses to be steered are found by applying the corrections for variation, deviation, leeway and current. Each of these corrections has sometimes to be applied to the right, sometimes to the left of the true course, some according to their signs and some according to wind and weather. From which follows, that nobody can foretell with any degree of certainty what the course to be steered ought to be, if wind and weather, and set and drift of current are not known. This does not mean that the jotting down of courses should be dispensed with, but merely points out what is and may be expected under certain conditions.

There are cases where masters have come very near "planting" their vessels from causes of this kind. The writer knows of several cases: One particularly was where the compass adjuster set the course by an azimuth, and the vessel made a good course of it; and as a consequence this course was duly entered in the log-book as the proper medicine. Twice after this, or for two trips the vessel made good this course, but the third time she was some 12 miles off the "track" when the end of the course was reached. The first thing the captain did was to blame the compass, so when the next time came for him to steer this course he altered it in order to make allowance for the (apparent) wrong steering of the trip before. This time the weather was thick, and it was through good luck that he kept his vessel off the beach. He should have steered the same course as before, for it was the current, and not the compass, that caused the mischief; and as has already been said, the compass is too apt to be blamed rather than something else. This does not signify, though, that the compass is not to blame as often as the current, and in the majority of cases it no doubt is.

The navigator must be cautioned against an error that is liable to occur at any time, in the practice of setting the

course by porting or starboarding so much from the course as shown coming out of piers; and that is, that the compass must be free from deviation, so that the same agreement occurs in the swing of the ship's head as the swing of the compass card by which the ship's head is shifted. The compass in a case of this kind is merely employed to measure the horizontal angle between the direction of the pier and the direction of the port bound for; whether the compass is correct or not does not make any difference so long as the compass measures the angle. In order to do this, however, the compass card must swing with the boat's head, that is, the same arc described by compass must equal the arc described by the ship's head. This cannot be done where there is much deviation for the attraction causing it prevents the compass card, or needle, from moving freely; it is not the compass card that moves, but it is the boat that moves which makes it appear that the compass card revolves when the vessel's head is altered from point to point. The compass card should remain stationary at all times, but it can only do so where there is no attraction to cause deviation.

In cases where there is not much of an angle between that of the pier and course desired to be steered this method answers very correctly, and even up to a couple of points, but larger angles than two points should be guarded against. If there should be a quarter point of deviation, which means that the card is attracted from its stationary position, the angle as measured by compass may be more or less than the angle measured by the ship's head. Where a compass is very nearly correct this method can be used up to four points with very good results. This practice is general in boats in the trans-lake trade. It must be apparent to the student that if his course is ENE (true) and the pier he is going out of is east (true), the angle, or difference between the two directions is just two points, and that if he starboards so that his ship's head moves two points in azimuth, the vessel's head is in the direction of ENE and by keeping in this direction is bound to make a true ENE course. The compass may show the course to be only E by N, but nevertheless the ship's head is ENE because it was shifted by the direction of the piers, the compass being used only to measure the horizontal angle. To head E by N, as in the above case, the compass would have to read, when going out of the pier, E by S. The true course is here used only to get the angle between the pier and the port bound for or the true course to the port of destination. Of course, the directions in which the vessel heads are true, that is, the ship's head itself, but the compass may show something altogether different. This makes no difference so long as the angle is there. In this case the ship's head represents the true compass and the ship's compass is only employed to keep her head in the prescribed direction. In this practice the compass works a good deal on the principle of the pelorus, the difference being that after the angle or course is found the compass is able to hold it and show it, whereas the pelorus cannot, because its card is "dumb" instead of "alive."

It must also be understood that the variation between departure and destination must be of the same name, and practically of the same amount.

GERMAN BOATS PROFITABLE.

The German steamship companies are well satisfied with the result of last year's working (says the Berlin correspondent of the *Morning Post*). The Hamburg-America line made a gross profit of 37,000,000 marks (£1,850,000) and paid a dividend of 11 per cent. The Norddeutscher-Lloyd had a surplus of 33,000,000 marks (£1,650,000), and paid 7½ per cent dividend. The German Australian Steamship Co. paid eight per cent; the Hansa company, of Bremen, nine per cent; the German East Africa line four per cent; the Oldenburg Portuguese Steamship Co. eight per cent, and the Cosmos line of Hamburg 14 per cent. The Baltic steamship companies paid a more modest dividend of from two and one-half to four per cent; while the Rickmers line, which employs only sailing vessels, paid seven per cent. The Hamburg-South America line, which has hitherto run vessels with a speed of only 12½ to 13½ knots, paid a dividend of ten per cent. In conjunction with the Hamburg-America line, this company has now established a service of fast steamers between Hamburg and Argentina.

None of the German shipping companies has suffered from strikes, and even during the recent troubles with the seamen at Hamburg all the vessels have left the port with a full complement.

Great interest has been aroused by the announcement that the Hamburg-America line intends to run a service of fast steamers between Hamburg and the ports on the Persian gulf. The accomplishment of such a plan would (according to the German newspapers) not only be economically advantageous, but also politically important. English shipping companies, they point out, are at present absolute masters in the Persian gulf, and have formed a trust in order better to protect their several interests. The German consul at Bagdad has recently drawn public attention to the circumstance that the exports from the Persian gulf to German ports by means of English steamers have been increasing year by year. The Hamburg-America line apparently believes that this trade will now support a special German line of steamers, for such an enterprise would not be started on the mere prospect of the Bagdad railway being constructed. The German newspapers note that the rich valleys of the Tigris and the Euphrates yield wool, gum, and sesame, and are an excellent market for cotton goods and ironware. German business men are therefore recommended not to neglect the opportunity of developing the remunerative trade with these regions.

STEAMER FOR ALFRED HOLT & CO.

Another of the vessels which Messrs. R. and W. Hawthorne, Leslie & Co., Ltd., have been constructing for Messrs. Alfred Holt & Co., of Liverpool, has just been successfully launched on the Tyne. She has been named Antilochus, and is a sister ship to the Teucer, which was illustrated in the MARINE REVIEW on April 12, and attracted so much attention in British shipping circles at the time. The dimensions of the vessel are: 482 ft. by 54 ft. and 42 ft. 6 in. She will have a deadweight capacity of about 13,000 tons, and accommodation for a large number of emigrants. There will be seven holds, and the cargo gear will consist of 26 powerful winches, and 36 derricks, the latter being capable of lifting weights up to 36 tons. She has very spacious holds, clear of obstruction, and suited to the stowage of bulky cargo, such as railway cars or boilers. She will have no masts, but will have four large pillars, two forward and two aft—placed at the sides of the vessel, which will serve the purpose of derrick posts. The two forward pillars will be joined by a bridge about 80 ft. above the water, which will be useful as a lookout.

A revised chart in colors of Saginaw bay has just been issued by the United States lake survey office and is for sale by the MARINE REVIEW. The title of this chart has been changed to read "Coast Chart No. 2, Lake Huron, from Richmondville to Au Sable point, including Saginaw bay."

After six years of idleness the elevator at Prescott, Ont. has resumed business.

IMPROVING THE MISSOURI RIVER.

Four members of the rivers and harbors committee of the house of representatives, who were visitors to Kansas City last week, turned the tables on their entertainers and took the mass meeting arranged in honor of their coming practically into their own hands. The committee of the Commercial club, which had prepared a program for the visit of the congressional delegates, had expected it would be their purpose to learn about the Missouri river and why money should be expended by the government in its improvement. Preparations had been made to make a showing in that direction, but it developed early in the day that this purpose, if it existed at all, was far from being the primary object of the visit of the congressmen to Kansas City.

Instead of asking questions the congressmen talked, urging upon their hearers their desire that a strong public sentiment be created all over the country in favor of liberal appropriations for improvement of river and harbors. The keynote is an annual appropriation of $50,000,000 for this purpose, as against the present average of about $19,500,000, and it seems to be assumed by the visiting representatives that of this increased amount the Missouri river might expect a considerable share.

Congressman Ellis proposed at a meeting at the Commercial club rooms that an organization be formed, to be known as the Missouri Valley Waterway Association, the object of which should be the collection, preparation and presentation to congress of such statistics and other information, bearing upon the nature, extent, necessities and possibilities of the Missouri valley commerce and navigation as will tend to influence action for the permanent improvement of the Missouri river and its tributaries.

The membership of this association, as proposed by Mr. Ellis, should consist of individuals, corporations, commercial bodies, cities, incorporated towns and villages. The by-laws, drawn by Mr. Ellis, provide for a set of officers and an executive finance committee, the latter to conduct the business of the association in the interim between conventions.

Congressman Ellis warmly advocated such an organization and was seconded by Congressman Ransdell, of Louisiana, who is chairman of the executive committee of the national rivers and harbors congress, an association formed in Washington, D. C., last January for the purpose of encouraging a favorable sentiment on behalf of more liberal river and harbor appropriations. No action was taken on the proposition last night, it being suggested that the matter be referred to a subsequent meeting, when all interested commercial bodies should be asked to be represented.

Congressman Ellis, in urging the action proposed by him, declared it would be necessary to expend money in furtherance of the proposed river improvement.

"I want to see Kansas City and the towns up the river, and down, spend money on this proposition in three ways," he said. "In the first place I want to see every organization of business men, every industrial organization of this city, made a member of the National Rivers and Harbors Congress, paying the initial fee for membership in that organization and helping its work in every possible way.

"Another way is the organization of a Missouri Valley Waterway Development Association, which should include this city, Kansas City, Kan., and the towns up and down the river. It ought to have a large membership of individuals and corporations, of cities and towns, making up an influential constituency to take care of our particular project. The national rivers and harbors congress is too general in its scope to give any special attention to the Missouri river and its particular needs.

"The third way I would have money spent in the development of the Missouri river is for the people of Kansas City to invest in the proposed barge line proposition."

RANSDELL AGREES WITH ELLIS.

Congressman Ransdell agreed heartily with Mr. Ellis. "By all means have a Missouri river association," he said, "I will illustrate what I mean by referring to the work of the great Ohio River Improvement Association. When they want to reach congress they do it largely through their association. They raised $30,000 in cash to carry on their campaign of education. They invited the rivers and harbors congress to pay a visit to that valley. They took us from Pittsburg to Cairo, a distance of 1,000 miles, on a most palatial steamer, and if ever a fine showing of a body of men was made, it was by this association. We were entertained in royal style and, better than that, we were met at the different towns by the best business men, who came and explained to us the needs of their respective localities. Furthermore there is not a session of congress that they do not have special representatives in Washington explaining to us what they need.

"Another instance, I live in the great overflow belt of the Mississippi river. We cannot live in that country without levees and it is necessary to have considerable aid from congress to improve our levees. About eighteen or twenty years ago we found it necessary to reach congress and in order to do it properly we organized every friend of the levee between Cairo and the mouth of the river into the Interstate Mississippi River Levee Association. There were twenty-five or so local levee organizations and we assessed each of these from $50 to $750 according to the importance of the various bodies and the districts they represented.

"With that money we have conducted a campaign of education in regard to levees. We have published two large volumes on the subject. We have maintained in the city of Washington for fourteen years one of the brightest of men, who works in season and out, looking after the interests of the levee system.

"You have a tremendous problem here if you are going to improve this river. It is going to cost, in my judgment, many millions of dollars, and you cannot do better than take the suggestion made here by Mr. Ellis to organize a Missouri river improvement association.

"You must do that in addition to what I want you to do, in furtherance of the work of the National Rivers and Harbors Congress. The Missouri river is your local project, but if you want to succeed with your local project, you must also take up and support the national project. You must first get a sentiment worked up throughout the length and breadth of this land for plenty of money for the improvement of rivers and harbors. If you do not succeed in doing this, you are not going to get money for the improvement of the Missouri river."

It was nine o'clock when the evening meeting at the Commercial club rooms was called to order by Chairman Parker. He introduced Mayor Rose, of Kansas City, Kan., who spoke briefly, instancing the fact that the Kaw valley drainage district had voted a debt of $525,000 for the improvement of the Kaw river and said this evidenced the sincerity of the people of Kansas in urging river improvements.

J. S. Silvey, secretary of the Mercantile club, of Kansas City, Kan., said the congressional visitors could rest assured the business interests on the Kansas side of the line would do all that could be expected of them in furtherance of the improvement fostered by the national rivers and harbors congress.

APPEAL TO PRESIDENT ROOSEVELT.

The Merchant Marine League Visits the White House and Receives the President's Cordial Support—Also Calls Upon Speaker Cannon.

President Roosevelt and Speaker Cannon each separately received a large delegation of the officers, vice presidents and many important members of the Merchant Marine League of the United States, at the White House and at the Capitol, respectively, on Thursday last, May 17. The delegation called in order to hasten the consideration of the Merchant Marine Commission's shipping bill by the House Merchant Marine and Fisheries Committee, and by the house of representatives.

The League party was much gratified with the outcome of the visit, feeling greatly encouraged both by the hearty support which President Roosevelt assured the visitors he had given to the bill in the past and is prepared to give it until it is enacted, and by the attitude of Speaker Cannon, who had been so erroneously represented as being strongly opposed to the bill. He had nothing whatever to say in opposition to the measure, and his cordiality and expressions satisfied the delegation that at the proper time the Speaker's support would be found back of the bill.

PERSONNEL OF THE LEAGUE DELEGATION.

President Harvey D. Goulder, of Cleveland, headed the delegation, and was accompanied by Secretary John A. Penton, also of Cleveland. The other members making up the party that called upon the president and the speaker were: Vice President Aaron Vanderbilt, of the Wheeler Condenser & Engineering Co., of New York city; vice president for Illinois, C. E. Kremer, admiralty attorney of Chicago; vice president for New Jersey, Col. E. A. Stevens, of Hoboken; vice president for New York, C. P. Letchworth, of Buffalo, president of the Pratt & Letchworth Co.; vice president for Maryland, R. M. Spedden, of Baltimore, a banker; vice president for Massachusetts, Hon. Samuel L. Spedden, of Boston, former member of congress, and a leading New England attorney; vice president for Pennsylvania, George E. Bartol, of Philadelphia, president of the Philadelphia Bourse; Vice President Lyman H. Treadway, representing the Cleveland Chamber of Commerce; W. H. Hunt, representing the Cleveland Builders' Exchange, Abraham Stern, Francis Lyon and E. E. Strong, all prominent merchants and manufacturers of Cleveland; Daniel S. Emery, of Boston; J. A. McGean, president of the American Linseed Oil Co., of New York city; D. A. Tompkins, the well-known publicist and manufacturer, of Charlotte, N. C., representing the National Association of Manufacturers, specially appointed by that organization to co-operate with the Merchant Marine League in its efforts in behalf of the passage of the shipping bill; Francis L. Robbins, president of the Pittsburg Coal Co., of Pittsburg; John G. Shaw, of Detroit, Mich., attorney; F. S. Pendleton, of Islesboro, Maine; Hon. S. B. Dick, of Meadville, Pa., a prominent manufacturer and a former member of congress; R. H. Adams, of New York, a manufacturer; J. P. Robinson, of New York, a salt importer and warehouse man; J. G. Butler Jr., of Youngstown, O., one of the pioneer iron and steel manufacturers of the United States; H. H. Sharp, of the Buckeye Engine Co., of Salem, O.; H. S. Holden, of Syracuse, N. Y., president of the Commercial National Bank, accompanied by W. A. Holden and W. L. Smith, also of Syracuse, and John S. Hyde, of Bath, Maine.

Telegrams and letters of regret were also received from a large number of members, who are heartily in favor of the shipping bill, but were prevented from attending because of illness, or unavoidable engagements.

THE DELEGATION'S RECEPTION AT THE WHITE HOUSE.

The party called at the white house at eleven o'clock, by appointment, and was at once ushered into the cabinet room, where they were received by the president. President Goulder, of the League, addressed President Roossevelt, briefly referred to the career and work of the League, the educational campaign it has conducted, the unselfishess and disinterestedness of its members, who have nothing to gain, personally, by the passage of the bill, and their patriotic desire to see our foreign-going merchant marine increase and prosper as had the other great industries of the country. Mr. Goulder discussed the bill framed by the Merchant Marine Commission, its moderate character and provisions, what it would accomplish in starting the rehabilitation of our shipping in the foreign trade, pointed out that the matter of free raw materials for the building of a ship for our foreign trade had been settled fifteen years ago by the provision to that effect in the last three tariff acts; the demonstrated ineffectiveness of a free ship measure to give us an American ocean-going marine, and the abandonment of that suggestion by practical men; the apparently insuperable obstacles to discrimination by tariff and tonnage duties; the superiority of the subsidy plan, and the manner in which the pending bill would, under the subsidy policy, give to the United States the needed start toward the upbuilding of its foreign-going shipping, and which, he pointed out, is the policy in force in other maritime countries. Mr. Goulder closed his remarks with the impressive reading of the following memorial, presented by the League, and signed by every member who was present.

THE LEAGUE'S MEMORIAL TO PRESIDENT ROOSEVELT.

Mr. President:—Publicists and economists of authority from remotest time have urged the advantage in peace and war of an adequate merchant marine on the international seas to that nation whose situation and business habits invite or permit of its existence.

OUR SEACOAST, FOREIGN TRADE AND OCEAN FREIGHT BILL.

This country, with the greatest navigable seacoast of all, whenever and so long as it had fair competitive terms, flourished in its shipping, and now, furnishing or providing nearly a seventh of the world's over-seas interchanges, carries about one-tenth of this under our flag, while foreigners take about half a million dollars each day for our freightage. And about a sixth of our tonnage is definitely stated to be under option to a subsidizing nation—this the cream of what we have left.

STATESMEN, PRESIDENTS, BUSINESS MEN ALL UNITED.

Party platforms, presidential messages, testimony of statesmen, and of those engaged in business pursuits, never more definitely and certainly than now have united in one unbroken current favoring the broad proposition of the national advantage of a merchant marine and its applicability to our country and our people.

NATIONAL ADVANTAGES, COMMERCIAL ADVANTAGES, NATIONAL SAFETY.

Rehabilitation of a great national industry in ship building, repairing and outfitting, the commercial advantage of bringing so many millions of dollars of freight earnings annually into the channels of circulation in this country, would be matched or exceeded by the advantage of having our own commercial instrumentalities to develop trade abroad, and on occasion the element of safety, all of which must follow if we accept the world-wide testimony as to the value of a nation's own flag on the seas.

PENDING SHIPPING BILL OUTCOME OF PRESIDENT'S EFFORTS.

The Merchant Marine League, learning from current

rumor that the pending legislation is in danger of neglect, takes occasion with your permission to call attention to the things above stated, and to the fact that the bill now before congress is the outcome of long and careful effort of a special Congressional Commission appointed as a result of the recommendation of your own message to congress.

POWERFUL AND WIDESPREAD INDORSEMENT OF BILL.

The bill has the indorsement of great national organizations, including the American Bankers' Association, National Association of Manufacturers, National Board of Trade, American Cotton Manufacturs' Association, National Metal Trades Association, National Founders Association, National Association of Wholesale Druggists, and others, and of a large number of local business and manufacturing associations in all sections of the country, representing tens upon tens of thousands of competent, successful, patriotic and thoughtful men scattered throughout the length and breadth of the land.

RELIANCE UPON PRESIDENT ROOSEVELT'S HELP.

Our hope and our request is that whatever may be in the power of the president in line of the recommendations of all the presidents of the United States may be done to bring this matter before the people for thought and discussion, and before congress for action, to the end that the desired consummation of restoring our American shipping may be speedily achieved.

PRESIDENT ROOSEVELT'S HEARTY APPROVAL WARMLY EXPRESSED.

President Roosevelt's response was commendatory, sympathetic and emphatically favorable. Like the Methodist brother, he said, he had conviction, and needed no persuasion. He realized the great necessity for a merchant marine, had long and repeatedly advocated the creation of one, had appealed to congress over and over again for effective legislation to that end, had studied the bill prepared by the Merchant Marine Commission, which he regarded as an eminently good, skillfully drawn measure, and one, he was convinced, which would go a long way toward accomplishing that which the people of the country so overwhelmingly desired—the rehabilitation of our shipping in the foreign trade. The president assured the delegation that he had done all that in the past seemed to him wise to do; he was still ready and eager to do whatever it was yet possible for him to do, to secure early and favorable consideration for the bill in the house of representatives. The mission of the League, it was apparent from the interview with President Roosevelt, was not with him, whose sincerity and whose enthusiastic desire for the bill's early enactment admitted of no possible doubt whatever, but with the legislative branch of the government, particularly the house of representatives, and Speaker Cannon.

SECRETARY OF THE TREASURY SHAW SEEN.

After a brief call upon Secretary of the Treasury Leslie M. Shaw, who is a loyal friend, so earnest, so persistent and so eloquent an advocate of an American merchant marine, as has been shown over and over again in his public speeches, the delegation proceeded to the capitol, where the members were presented to Senators Foraker and Dick, of Ohio, good warm friends of the shipping bill.

SPEAKER CANNON WAITED UPON BY THE LEAGUE DELEGATION.

The party was then conducted to the ways and means committee of the house of representatives, where it was met by Representative Charles H. Grosvenor, chairman of the House Merchant Marine and Fisheries Committee, in which committee the shipping bill is now lodged, and by Representative John Dalzell, by whom the members were presented to Speaker Cannon.

STRONG ARGUMENT FOR PASSAGE OF SHIPPING BILL.

President Goulder again, and in a most earnest manner, presented to the speaker arguments similar to those presented to President Roosevelt, made clear to him that the present condition of American shipping in the foreign trade is humiliating, dangerous and intolerable; that remedial legislation has long been promised, and that the time for its enactment has arrived; that the country is not only ready for shipping legislation, but it is eager for it—insistent for it; that the great commercial, financial and industrial organizations, national, state and local, in every part of the country, which have repeatedly adopted resolutions in favor of an American oversea shipping, were now specifically demanding the passage of the Merchant Marine Commission shipping bill, and that the League was equally pronounced in favor of that bill as the best measure yet prepared with which to make the needed start toward the possession, by the United States, of a foreign-going marine measurably equal to its maritime and commercial needs.

SPEAKER CANNON ATTENTIVE AND FRIENDLY.

Speaker Cannon listened with careful attention to what was said, and was most agreeable and gracious in his reply. He showed a keen appreciation of the difficulties besetting those who have so long labored for the upbuilding of our ocean shipping. No one who heard Speaker Cannon could doubt that he clearly understands the situation. There can be no doubt that the delegation made a strong and favorable impression upon the speaker, that he could not escape the conviction that he saw before him men of high character, conspicuous in their several communities, animated by an unselfish and determined purpose to persevere in the educational work in which they have been so industriously engaged until their efforts are crowned with enduring success. The speaker's manner was most friendly and genial, and it was the unanimous conclusion of the delegation, when it retired from the speaker's presence, that he can be relied upon to assist in the passage of the shipping bill. He did not, however, pledge himself to favor the passage of the bill at the present session of congress.

GOOD IMPRESSION MADE.

The impression made by the Merchant Marine League delegation in Washington was most helpful to shipping legislation, and served to remove the doubts that have been created in some minds by hostile criticism as to the character and standing of the men who are taking the lead in the country in behalf of American shipping legislation in general and the pending Congressional Merchant Marine Commission's bill in particular.

The belief is now that the shipping bill will shortly be reported favorably from the House Merchant Marine and Fisheries committee, and substantial hope is felt for its passage before the present session closes. There is much for the Merchant Marine League yet to do, and it is girded up to continue to final and permanent success.

The Canadian Pacific railroad's new steamship Empress of Britain broke all records for the southern route for Liverpool via Cape Race, making the voyage in five days, twenty-three hours and 17 minutes. The new liner was heartily cheered by an immense crowd when she swung to the docks at Quebec. Sir Thomas Shaughnessy, president of the Canadian Pacific who was a passenger, stated that the performance of the vessel was better than ever her builders expected. The new steamship is a splendid specimen of the ship builder's art, embracing every known advance and costing over $2,000,000.

The battleship Louisiana, built by the Newport News Ship Building & Dry Dock Co., was delivered to the government on May 20, at the Portsmouth navy yard.

LIVERPOOL SHIPPING LETTER.

Liverpool, May 14.—The Hon. C. A. Parsons, inventor of the steam turbine lectured on his invention to a crowded meeting of the Royal Institution, London, on May 4. After explaining the construction of the turbine somewhat technically, he traced the main developments of the De Laval, the Curtis and the Parsons turbines practically to date, and pointed out the respects in which they differed. On these three, he said, practically all the other turbines in existence were based, some of them, indeed, depended for their novelty on minor details which had been discarded in the course of the larger developments. Mr. Parsons went on to discuss the difficulties which had been, or were in process of being overcome, difficulties from water condensing on the blades; difficulties from the unavoidable escape of steam; from insufficiently rapid propeller action; and from the "cavitation" of the water behind the propellers. Despite all these difficulties, the success of the turbine, he said, was undoubted. Answering recent criticisms, Mr. Parsons read a letter from the Allan line, which assured him that, so far from there being any intention to revert to the reciprocal engine, they were, and intended to remain faithful to the turbine. The ship under order, over which discussion had been raised was only a large steamer of 14 knots, and it is notorious that turbines are inefficient at low speeds. Mr. Parsons emphasized that the larger the turbines the greater the efficiency, particular reference being made to the new Cunarders Mauritania and Lusitania. As to the performances of the Atlantic turbines, the Virginian and Victorian, the consumption of coal was, he said, no more —probably less—than that of similar vessels fitted with the best piston engines. The Carmania and the Caronia were, Mr. Parsons said, being closely watched in service, and their coal was being carefully measured. It was too soon to give the results of the comparison, but there did not seem to be much difference between the boats. Mr. Parsons said it was safe to infer that the big boats would give eminently satisfactory results, and the same might be confidently expected of the ships of war that were building. This latter reference, it should be noted, covers the Dreadnought, the three Inflexibles, the five 33-knot destroyers, and the 36-knot destroyer. Mr. Parsons, in the course of his remarks, made a shrewd observation to the effect that it was unwise to put an invention to unsuitable uses. He did not think there would ever be a gas turbine or a turbine motor boat, but a turbine motor car was possible. The steam turbine was demonstrably unsuitable to the propulsion of cargo boats of moderate and slow speeds, but an adaptation of the turbine and the reciprocating engine had been designed in which the steam was taken up after it had been used in the cylinders, and its further expansion used in the turbine down to the condenser. It was estimated that the adaptation would work a saving of 15 to 20 per cent in the cost of coal, and in all probability, a vessel fitted with the combination would be in service before the expiry of twelve months.

While on the question of turbines it is of interest to note that the new turbine steamer, Duchess of Argyll, has just successfully undergone her speed trials. So far as general dimensions are concerned, she resembles the King Edward, with which Messrs. Denny Bros., of Dumbarton, introduced the turbine system of propulsion to merchant vessels in 1901. The new steamer is the sixteenth turbine built by Messrs Denny, and she embodies all the improvements obtained by the experience of the past five years. During her final speed trials before being officially taken over by the Caledonian Steam Packet Co., she maintained a speed of 21.65 knots, and on the double journey a mean of 21.1 knots. Sir Mitchell Thomson who spoke on behalf of the owners at the luncheon which followed said the builders had earned a premium for having turned out a boat that sailed faster than that bargained for. Mr. Ward speaking for the builders said there had been no greater revolution during last century than that brought about by Mr. Parsons. Within six years they had been placed in the position that they were able to circle the world by turbine. He referred to the performance of the turbine steamer Maheno, built by Messrs. Denny, for the Union Steamship Co., of New Zealand, which arrived at Vancouver from New Zealand, having broken all previous records and also the postal regulation time by three days. In the success of the turbine, they had a victory not for one country alone, but for the whole world.

AROUND THE GREAT LAKES

The steamer Simon Langell broke her main shaft near Harbor Beach last week.

Mr. W. H. Sanborn, of Port Huron, has sold the wooden steamer Alaska to Canadian parties.

The dredging for the new 700-ft. dry dock for the American Ship Building Co. at Lorain has been completed.

The wreck of the tug Fannie Tuthill has been removed from the channel in Lake St. Clair by Capt. James Reid, the wrecker.

The steamer Ferdinand Schlesinger which ran ashore near Middle island, Lake Huron, last fall, has been repaired at Milwaukee.

The steamer Huronic is undergoing extensive repairs at the dry dock of the Detroit Ship Building Co. She was badly injured on the starboard side.

The steamer W. G. Pollock, building for Wm. H. Becker, will be launched at the Cleveland yard of the American Ship Building Co. on June 16.

The steamer Ellen Williams, which was damaged by hitting an obstruction near Bois Blanc island, has been raised by the Hackett Wrecking Co., and taken to Amherstburg.

Mr. John Craig, of Toledo, was in Cleveland during the present week. He says that his sons are considering the establishment of a ship yard on the Pacific coast but have not reached any definite conclusion.

The steamer Harvey D. Goulder carried a cargo of 9,965 tons of soft coal into the Milwaukee-Western Fuel Co.'s dock, Milwaukee, last week, the largest cargo of soft coal ever carried into that port.

By the breaking of her steering gear in the St. Clair river this week, the steamer Briton, of the Pittsburg Steamship Co.'s fleet, ran hard aground in the sand bar at the foot of Fawn island. The Briton is lying on the bar in but two feet of water amidships and her shaft is three feet above water. It will probably be necessary to dredge in order to relieve her.

It is reported from Conneaut that 9,356 tons were taken out of the steamer J. G. Butler in three hours and forty-five minutes. In July, 1904, the steamer Augustus B. Wolvin discharged a cargo of 9,945 tons in four hours and thirty minutes; in July, 1905, the steamer George W. Perkins discharged a cargo of 10,514 tons in four hours and ten minutes, putting the ore directly into cars.

WANTED and FOR SALE Department.

PROPOSALS.

Treasury Department, Office of General Superintendent U. S. Life-Saving Service, Washington, D. C., April 30, 1906. Sealed proposals will be received at this office until 2 o'clock p. m. of Wednesday, the 23d day of May, 1906, and then publicly opened, for furnishing supplies required for use of the Life-Saving Service for the fiscal year ending June 30, 1907; the supplies to be delivered at such points in New York City, Grand Haven, Mich., and San Francisco, Cal., as may be required, and in the quantities named in the specifications. The supplies needed consist of Beds, Bedding, and Furniture; Brooms and Brushes; Crockery; Hardware; Household Goods; Lamps, Lanterns, etc.; Medicines, etc., Paints, Oils, etc; Ship Chandlery; Stoves, etc.; Tools, and Miscellaneous Articles; all of which are enumerated in the specifications attached to the form of bid, etc., which may be obtained upon application to this office, or to the Inspector of Life-Saving Stations, 379 Washington Street, New York City; Superintendent Twelfth Life Saving District, Grand Haven, Mich.; and Superintendent Thirteenth Life-Saving District, New Appraisers' Stores, San Francisco, Cal. Envelopes containing proposals should be addressed to the "General Superintendent U. S. Life-Saving Service, Washington, D. C.," and marked on the outside "Proposals for Annual Supplies." The right is reserved to reject any or all bids, and to waive defects, if deemed for the interests of the Government.

S. I. KIMBALL,
General Superintendent.

FOR SALE.

For Sale.

Scotch Marine Boiler 6 x 8 feet and two 11 x 12 Marine Engines complete. Good bargain. AMERICAN CRUSHED STONE COMPANY, Chicago, Ill.

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FOR SALE.

Schooner "Richard Mott"

For Sale.

267 Gross tons.
254 Net tons.
147 ft. long.
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10 ft. 3" hold.
Built 1854.
Rebuilt complete 1881.
Bottom caulked 1900.
Dry docked 1902.
Top and deck caulked 1905.
Rate A-2-½.
Valuation in Lloyds $2,500.00.

WM. MUELLER COMPANY,
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For Sale.

1,000 h. p. fore and aft Neafie & Levy compound Engine; surface condenser; independent pumps.
Two 12 foot Scotch Boilers.
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MARVIN BRIGGS,
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Detroit, Mich.

For Sale.

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JOHN HOLWAY,
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WANTED

Launch Hulls Wanted.

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Buyers' Directory of the Marine Trade

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See accompanying index of Advertisers for full addresses of concerns in this directory.

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AIR PORTS, DEAD LIGHTS, ETC.
Marine Mfg. & Supply Co.....New York.

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Great Lakes Engineering Works.....Detroit

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Great Lakes Engineering Works.....Detroit.

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White, Johnson, McCaslin & Cannon Cleveland

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Republic Belting & Supply Co.....Cleveland.

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Milwaukee Dry Dock Co.....Milwaukee.

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.....Newport News, Va.
New York Shipbuilding Co.....Camden, N. J.
Northwestern Steam Boiler & Mfg. Co....
.....Duluth, Minn.
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..... Cleveland.

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Standard Contracting Co..... Clevelnad
Sullivan, M.....Detroit.

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Dunbar & Sullivan Dredging Co.....Buffalo.
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Sullivan, M.....Detroit.

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Atlantic Works.....East Boston, Mass.
Buffalo Dry Dock Co.....Buffalo.
Chicago Ship Building Co.....Chicago.
Cramp, Wm. & Sons.....Philadelphia.
Detroit Ship Building Co.....Detroit.
Great Lakes Engineering Works.....Detroit.
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Thropp & Sons, John E.....Trenton, N. J.

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General Electric Co.....Schenectady, N. Y.

Buyers' Directory of the Marine Trade.—*Continued.*

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Thropp & Sons, John E.....Trenton, N. J.

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Chase Machine Co.....Cleveland.
Cramp, Wm. & Sons.....Philadelphia.
Detroit Ship Building Co.....Detroit.
Fletcher, W. & A. Co.....Hoboken, N. J.
Fore River Shipbuilding Co....Quincy, Mass.
Great Lakes Engineering Works.Detroit, Mich.
Hall Bros. .....Philadelphia.
Lockwood Mfg. Co.....East Boston, Mass.
Maryland Steel Co.....Sparrows Point, Md.
Milwaukee Dry Dock Co.....Milwaukee.
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.....Newport News, Va.
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Northwestern Steam Boiler & Mfg. Co...
..... Duluth, Mich.
Quintard Iron Works Co.....New York.
Roach's Ship Yard.....Chester, Pa.
Sheriffs Mfg. Co.....Milwaukee.
Superior Ship Building Co....Superior, Wis.
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Lunkenheimer Co. .....Cincinnati.
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Kidd, Joseph.....Duluth, Minn.
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.....Perth Amboy, N. J.
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General Electric Co.....Schenectady, N. Y.

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Dixon Crucible Co., Joseph..Jersey City, N. J

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.....Perth Amboy, N. J.

HAMMERS, STEAM.
Chase Machine Co.....Cleveland.

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Brown Hoisting Machinery Co. (Inc.)....
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Chase Machine Co.....Cleveland.
Dake Engine Co..... Grand Haven, Mich.
General Electric Co.....New York.
Georgian Bay Engineering Works.....
.....Midland, Ont.
Hyde Windlass Co.....Bath, Me.
Marine Iron Co.....Bay City.

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HOLLOW STAYBOLT IRON.
Falls Hollow Staybolt Co...Cuyahoga Falls, O.

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Roelker, H. B.....New York.

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Lunkenheimer Co.....Cincinnati.
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Sullivan, D. & Co.....Chicago.

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Jenkins Bros. .....New York.
Katzenstein, L. & Co.....New York.
The National Metallic Packing Co....Oberlin, O.
Republic Belting & Supply Co.....Cleveland, O.

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Baker, Howard H. & Co.....Buffalo.
Upson-Walton Co. .....Cleveland.

PATTERN SHOP MACHINERY.
Atlantic Works, Inc.....Philadelphia.

express steamer "Kaiser

The poet astride h
Drawn by John T. A

Which is lovely for a poet
Who is writing for the money
And is getting paid at space-rates,
Hip, hooray for Indian summer!
Hip, hooray for Hiawatha!
I could keep this up forever,
But I guess it's best to cut it.

* * * * *

What's that? I'm a dandy guesser?
Think of rhyming things together.

As it starts with bigger letters,
I should answer. I should tell you,
Just as Henry Wadsworth might have
Had they asked him the same question
In his palmy days at Cambridge—
I should answer, I should tell you,
It was 'cause 'twas Indian summer,
And because it's—oh, so easy!—
And because I never have to

Who can write ballades and rondeaus,
Villanelles and kindred verses;
Should you ask me—I repeat it—
Why I write this Hiawatha-
Indianapolis kind of poem,
That is only called a poem,

"Howdy, Br'er
"No mo' Ah ai

A

The girl's
ters to our mutu
may present you
The suitor—

The girl—
this spring."
The girl's
suppose it's all
look like anybod

AN AC

JUMPING abo
Looking for
Into each well-h
Nosing with all
Catching a croo
Opening many
Losing no half-v
Naming one ras
Seeing, with op
Things the corr
Endlessly askin
Fearless, 'tis not
Finding a wealt
Everywhere he
Now that you've
See if 'tis who y

WHAT H

Teacher—
automobile for
for $1,

ABOVE SUSPICION.

Simpson? Ah didn' know yo' wuz 'dicted ter equestrianizzum."
n't, Br'er Johnson. Dis yer's kerosene in de daimyjohn; an', mo'n dat, yo' kin smell mah breff."

UP-TO-DATE JOURNALISM.

THE ingenuity of the metropolitan editor is amazing. For example: Vesuvius is in full blast, and so are the foreign correspondents. One eruption just about matches the other—both are spectacular. Lava darkens all the landscape of Italy, and an inky smudge darkens the front pages of the Gotham evening extras published the day before yesterday. Then comes a day when there is nothing more to say. The volcano news has been told. But surely there is something more. How can the editor skip a day, waiting for Vesuvius to get busy again? He can't. There must be a big story for the next issue. This waiting for things to happen is mediæval. The editor gives a curt order. When the paper hits the street the head-lines are in full eruption:

WHAT WOULD HAPPEN IF A VESUVIUS BROKE OUT NEAR NEW YORK?

N INTERNATIONAL DIFFERENCE.

IN FRANCE.

ather—"And now, having settled the financial matıal satisfaction, I will speak to my daughter, and you ırself to her in the character of fiancé."
—"Monsieur is graciousness itself."

IN AMERICA.

'Papa, Harold and I are engaged and will be married

father—"Well, I right. Does he y I know?"

:ROSTIC.

ut the country,
wrong and right,
id cranny
his might.
k a minute,
ı sore;
vay chance for
cal more.
tics ruthless,
upt would hide;
g questions—
denied.
h of subjects
goes—
read his title,
ou s'pose! S. W. G.

E MAKES.

A man buys an
1,000 and sells it
es he make?"
s an oath
"

REASSURING.

Junior partner—"Our creditors are beginning to suspect that we are hard up."

Senior partner—"We must reassure them. Don't you know some actress who would be willing to elope with you?"

Woman—"Now, if you don't leave at once I'll call my husband—and he's an old Harvard football player."

Tramp—"Lady, if yer love him don't call him out. I used ter play wid Yale."